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No. 59

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14 December 1976

# USSR AND EASTERN EUROPE SCIENTIFIC ABSTRACTS

## BIOMEDICAL AND BEHAVIORAL SCIENCES

No. 59

This serial publication contains abstracts of articles from USSR and Eastern Europe scientific and technical journals on the specific subjects reflected in the table of contents.

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I. BIOMEDICAL SCIENCES  
Aerospace Medicine

USSR

KATKOVSKIY, B. S., POMETOV, YU. D., ANDRETISOV, V. A., TIKHOMIROV, YE. P.

USE OF NPLB IN COMBINATION WITH PHYSICAL EXERCISES TO PREVENT ORTHOSTATIC STABILITY DISORDERS RESULTING FROM HYPOKINESIA

MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA" in Russian Moscow, 1976 pp 19-21

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 8 (III) 1976 Abstract No. 8R516 by L. G. Orlova]

[Text] Test subjects were preliminarily maintained in the antiorthostatic position (bed with  $-4^{\circ}$  slope) for 49 days. Two cycles of studies were performed: in cycle I, training began on day 28-30 of bedrest (BR), in cycle II -- on day 47-49, with reduced duration of application of negative pressure to the lower portion of the body (NPLB) and an increase in the degree of rarification. The results produced showed the possibility of simultaneous application of NPLB and physical loads without negative effects on the human body. This combination allowed rarefactions of up to 75 mmHg to be used.

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USSR

MACHINSKIY, G. V., KANIOVSKIY, S. S., DEMIDA, B. F.

NEGATIVE PRESSURE ON THE LOWER HALF OF THE BODY AND PHYSICAL WORKING CAPACITY

MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA" in Russian Moscow 1976 pp 70-71

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 8 (III) 1976 Abstract No. 8R522 by L. G. Orlova]

[Text] A study is made of the influence of negative pressure on the lower half of the body (NPLB) on 26 healthy men on the indicators of working capacity as to maximum time and consumption of  $O_2$  with physical loading on the bicycle ergometer. NPLB was performed in stages from -15 to -60 mmHg. The data were measured before and after 14 days bedrest in the antiorthostatic position at  $-4^{\circ}$ . Analysis of the results showed that NPLB did not influence the working capacity of healthy persons.

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USSR

SHALDIN, V. I., POLLYAK, N. A., VSHIVKOV, V. I.

INFLUENCE OF THE LEVEL OF PRESSURE DROP IN A CHAMBER WITH A SEALING DEVICE  
ON THE NATURE OF HYPEREMIA OF THE EXTREMITIES

MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N.  
DAVLENIYA" in Russian Moscow, 1976 pp 80-81

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 8 (III) 1976 Abstract No. 8R523  
by L. G. Orlova]

[Text] Imitation of pressure was produced in a sealing device by compression of the extremities with the collar of a sphygmomanometer. The temperature of the hand (or foot) was recorded by a TEMP-60 electrothermometer, the level of oxyhemoglobin by an O-36M oxyhemograph. It was found that when arterial hyperemia was produced, the sealing device should not compress the extremity by over 30-40 mmHg for the upper arm, 40-50 mmHg for the femur. A drop in temperature of the hand by  $1.0 \pm 0.2^\circ$ , of the foot by  $0.7 \pm 0.2^\circ$  and of oxyhemoglobin level was observed. Under conditions of reduced pressure in a chamber (by 40-50 mmHg), the capillary lumen was expanded, skin temperature

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USSR

SHALDIN, V. I., POLLYAK, N. A., VSHIVKOV, V. I., MATERIALY NAUCH. KONF.  
"FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA 1976 pp 80-81

increased by  $1.8 \pm 0.2^\circ$ . When pressure was decreased by 80-90 mmHg, the skin became bluish, lost clarity of contours, skin temperature dropped by  $0.7 \pm 0.1^\circ\text{C}$ . It is considered that the optimal degree of reduction of pressure is 40-50 mmHg. Under these conditions, the volumetric blood flow rate for the upper extremities increased by  $65 \pm 6.8\text{ cm}^3$ , for the lower extremity -- by  $111.7 \pm 11.7\text{ cm}^3$ .

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USSR

KOROBKOV, A. V., TALYSHEV, F. M.

SOME PHYSICAL AND CLINICAL EFFECTS OF LOCAL NEGATIVE PRESSURE

MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA" in Russian Moscow, 1976 pp 126-133

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 8 (III) 1976 Abstract No. 8R524 by L. G. Orlova]

[Text] In order to accelerate the restorative processes, a pressure chamber with a pressure of 800-1500 m was used in three successive stages over 1-2 min. Decompression of the extremities was alternated with compression of the extremities by 0.5-0.7 atm for 10-40 s, after which decompression was repeated with the same exposure and degree as in the first rise. The total duration of the influence was 12-15 minutes, 6-7 minutes on each extremity. The nature of the use of the pressure chamber in case of injuries to the skeletomuscular apparatus with simultaneous physical exercises or without them, and also in the case of the treatment of radiculitis (traumatic, catarrhal and infectious origin) is described. The criterion for determination of the influence of

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USSR

KOROBKOV, A. V., TALYSHEV, F. M., MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA" 1976 pp 126-133

decompression was a change in the color range of the skin in the area of application of local negative pressure. Maximum effectiveness of the use of decompression in the recovery period was noted in comparison to other means of restoration (manual massage, hydromassage, vibration massage, water procedures, sauna bath) in 9 sportsmen -- discus and hammer throwers.

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USSR

BYKOVA, YU. I.

USE OF DECOMPRESSION OF THE LOWER HALF OF THE BODY TO -50 mmHg IN THE "SEATED" POSE FOR DIAGNOSIS OF PREDISPOSITION OF THE ORGANISM TO UNCONCIOUS STATES

MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA" in Russian Moscow, 1976 pp 46-48

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 8 (III) 1976 Abstract No. 8R521 by L. G. Orlova]

[Text] A study is made of the possibility of using decompression of the lower half of the body (DLB) as a functional test in 150 persons (26 healthy persons, 99 pilots with histories of fainting, 25 with vascular-autonomic instability) in flight medicine practice. The study was performed in the seated position with a pressure of 50 mmHg. Data are presented, on the basis of which the study was halted.  $96.2 \pm 3.7\%$  of the healthy subjects and  $62.5 \pm 5\%$  of the persons with fainting histories tolerated decompression well for 8 minutes. This time was taken as the norm of resistance of the organism to

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USSR

BYKOVA, YU. I., MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA" 1976 pp 46-48

the influence of DLB. The lowest tolerance for DLB was noted at 18-24 years of age, the highest -- at 30-39 years of age. In pilots with fainting histories, DLB caused reduced tolerance 3.6 times more frequently than the orthostatic test, 5.6 times more frequently than moderate hypoxia, and 2 times more frequently than centrifuge testing. Apparently, reduced tolerance of the organism for decompression is related to disorders in the regulation of arterial vascular tonus. It is recommended that a test with 50 mmHg of DLB in the seated position be used in flight medical practice and for selection purposes.

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USSR

SUVOROV, P. M., SIDOROVA, K. A., ROZENBERG, G. L.

METHOD OF MEASUREMENT OF THE VOLUME OF THE LOWER EXTREMITIES IN CASES OF DECOMPRESSION OF THE LOWER HALF OF THE BODY (DLB) IN THE SEATED POSITION

MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA" in Russian Moscow, 1976 pp 50-52

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 8 (III) 1976 Abstract No. 8R518 by L. G. Orlova]

[Text] A rubber boot with low-elasticity sides was placed in a decompression chamber. A manometer tube was placed outside the boot and connected to the boot, and a mark was made at the level of 30 cm from the sole. Two burettes with a capacity of 1800 ml each, filled with water at 30-31 C, were placed beside the decompression chamber. These burettes communicated with the upper portion of the boot. The volume of the shin and foot was determined by the quantity of water required to fill the boot to the level of the mark on the manometer. The water was then drained into a sealed container. Measurements were performed under standard conditions, and after 2, 5 and 9

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USSR

SUVOROV, P. M., SIDOROVA, K. A., ROZENBERG, G. L., MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA 1976 pp 50-52

minutes of DLB at 50 mmHg, then after pressure was restored. A formula is presented for calculation of the blood pooled in the lower extremities under the influence of DLB. The total volume of the lower extremities was measured by a tape measure each 3 cm from the upper point of the femur to the knee. It was found that the total volume of the lower extremities increased by an average of 780-1430 ml upon decompression of the lower half of the body in the seated position.

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USSR

BASHKIROV, A. A., KICHIGIN, A. V., KOROBKOV, A. V., SHCHEL'TSIN, L. K.,  
KARPOVICH E. A.

INFLUENCE OF REDUCED PRESSURE ON THE LOWER HALF OF THE BODY (NPLB) ON  
SPONTANEOUS BIOELECTRIC ACTIVITY OF THE CAT CEREBRAL CORTEX

MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N.  
DAVLENIYA" in Russian Moscow, 1976 pp 35-37

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 8 (III) 1976 Abstract No. 8R517  
by L. G. Orlova]

[Text] A study is made of the influence of negative pressure (corresponding  
to 1000-15,000 m altimeter altitudes) on the lower half of the body (NPLB)  
of an animal on the functional status of the CNS and cerebral cortex of  
the cat under nembutal narcosis. A rapid drop in the amplitude and frequency  
of spindles in the EEG of the animal is noted with moderate NPLB, along with  
an increase in respiration frequency to 40-50 per minute (asymmetry of  
spindle activity is retained in both hemispheres). Repeated application of  
NPLB results in changes in this activity in different directions in different  
segments of the brain. The somato-sensory cortex and motor zone of the cortex

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USSR

RASHKIROV, A. A., KICHIGIN, A. V., KOROBKOV, A. V., SHCHEL'TSIN, L. K.,  
KARPOVICH, E. A., MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N.  
OTRITSATEL'N. DAVLENIYA" 1976 pp 35-37

had the greatest resistance to NPLB.

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YEGOROV, B. B., ASYAMOLOV, B. F., BARER, A. S., BOLOSHIN, V. G.,  
GEORGIEVSKIY, V. S., KAKURIN, L. I., KATKOVSKIY, B. S., PESTOV, I. D.,  
SAVILOV, A. A., TIKHOMIROV, YE. P.

RESULTS OF THE USE OF TRAINING SESSIONS WITH NPLB IN EXPERIMENTS WITH 14  
DAYS ANITORTHOSTATIC HYPOKINESIA

MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N.  
DAVLENIYA" in Russian Moscow, 1976 pp 17-19

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 8 (III), 1976 Abstract No. 8R504  
by A. V. Sterlikov]

[Text] Test subjects who spent 14 days in strict bedrest in an antiortho-  
static position ( $-4^{\circ}$ ), but who were given training sessions with negative  
pressure on the lower portion of the body (NPLB) in combination with moderate  
physical exercise and without it showed an improvement in orthostatic  
stability at the end of the experiment in comparison with a control group.  
However, in 22 of 24 subjects in the experimental groups, in spite of all  
training modes with NPLB, full restoration or conservation of orthostatic

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YEGOROV, B. B., ASYAMOLOV, B. F., BARER, A. S., BOLOSHIN, V. G.,  
GEORGIEVSKIY, V. S., KAKURIN, L. I., KATKOVSKIY, B. S., PESTOV, I. D.,  
SAVILOV, A. A., TIKHOMIROV, YE. P., MATERIALY NAUCH. KONF. "FIZIOL. I  
KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA" 1976 pp 17-19

stability was not observed. Apparently, NPLB alone, or even in combination  
with the physical exercises studied in this work, is insufficient for  
full prevention of orthostatic instability. Nevertheless, it should be  
noted that training sessions with NPLB are one obligatory component in  
the total system of preventive measures for long space flights.

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USSR

TIGRANYAN, R. A., PLODOVSKAYA, L. A., BELYAKOVA, M. I., KALITA, N. F.,  
SOCHILINA, L. B., TUZOVA, YE. G.

THE CAPABILITIES OF THE TRAINING INFLUENCE OF NPLB UNDER CONDITIONS OF  
ANITORTHOSTATIC HYPOKINESIA

MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N.  
DAVLENIYA" in Russian Moscow, 1976 pp 15-17

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 8 (III), 1976 Abstract No. 8R503  
by L. G. Orlova]

[Text] The influence of negative pressure on the lower half of the body  
(NPLB) for 280 minutes with rarifaction 25-35 mmHg was studied under conditions  
of 14 days antiorthostatic hypokinesia ( $-4^{\circ}$ ). Changes in metabolism were  
judged by the indicators of protein and carbohydrate metabolism, enzymatic  
activity and presence of steroid hormones in the biological fluids. These  
indications in the venous blood and daily urine were measured on the third,  
ninth and fourteenth days of bedrest and on the fourth, eighth and twelfth  
days after the experiment. A significant increase in the content of nitrogenous

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USSR

TIGRANYAN, R. A., PLODOVSKAYA, L. A., BELYAKOVA, M. I., KALITA, N. F.,  
SOCHILINA, L. B., TUZOVA, YE. G., MATERIALY NAUCH. KONF. "FIZIOL. I  
KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA" 1976 pp 15-17

substances, urea in the urine, creatine phosphokinase activity, lactate  
dehydrogenase (LDH), LDH<sub>3</sub>, glucose, pyruvic acid in the blood, an increase  
in the excretion of summary 17-oxycorticosteroids, dehydroepiandrosterone,  
as well as a drop in LDH<sub>1</sub> fraction activity and excretion of 17-ketosteroids  
with the urine were observed. Under the experimental conditions and during  
the postexperimental period, changes were observed in the metabolism in  
the skeletal muscles, cardiac muscle and in hormonal activity.

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USSR

NOVIKOV, I. I., VLASOV, V. B.

MORPHOLOGY OF THE CIRCULATORY BED OF ELEMENTS OF THE SOFT STROMA AND BONES OF THE REAR EXTREMITIES OF THE DOG UPON EXTENDED HYPODYNAMIA

VOPR. STRUKTUR. ORGANIZ. I VZAIMODEYSTVIYA ZLEMENTOV V SISTEME MIKROTSIRKULYATSII Moscow, 1976 pp 37-40 in Russian

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 8 (III), 1976 Abstract No. 8R502 by A. V. Sterlikov]

[Text] In dogs (8), kept in a tight cage for six months, significant morpho-functional restructuring of the circulatory and lymphatic bed of the fascia was observed. The vascular network in the deep and superficial layers of the fascia was unevenly expressed. Uneven filling and convolution of the smaller vessels and a number of morphological changes in the vascular wall were noted. In the compact and cancellous matter of the femur and tibia, morphological changes were noted indicating dystrophic processes: changes in the lumen and emptying of the Haversian canals, changes in the structure of the osteocytes. In the bone marrow vessels, an increase in blood stasis was observed, explained

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NOVIKOV, I. I., VLASOV, V. B., VOPR. STRUKTUR, ORGANIZ. I VZAIMODEYSTVIYA ZLEMENTOV V SISTEME MIKROTSIRKULYATSII 1976 pp 37-40

by a loss of vascular tonus. Around the veins, there were frequent diapedesis and microhemorrhages. Full recovery of the microcirculatory bed of the soft and hard stroma and bone marrow of the rear extremities of the dog did not occur even one month after termination of the experiment, indicating the deep restructuring which occurred.

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USSR

GUROVSKIY, N., professor, doctor of medical sciences, and YEGOROV, A., doctor of medical sciences

#### WEIGHTLESSNESS AND SPACE FLIGHT IN ORBITAL STATIONS

Yerevan KOMMUNIST in Russian 3 Oct 76 p 3

[Translation] Recently the VII Soviet-American Conference on Problems of Space Biology completed its work in Armenia. Our correspondent met with participants of the conference, Professor N. Gurovskiy, head of the Soviet delegation, and Doctor of medical sciences A. Yegorov and asked them to explain, on the pages of KOMMUNIST, the problem which had received extensive attention at the conference. We publish the article of the Soviet scientists below.

The Salyut orbital stations are unique laboratories where not only do the crew members carry out numerous scientific and technical experiments but they themselves are objects of intensive observation and study by physicians. Basic attention is given to study of the influence of weightlessness on the body.

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USSR

GUROVSKIY, N., and YEGOROV, A., KOMMUNIST 3 Oct 76 p 3

As is known, weightlessness is the primary and most specific factor in space flight affecting the physiological reactions, and, in the final account, the crew's condition.

Let us dwell briefly on the mechanisms of weightlessness's effect on the body.

In the ordinary conditions of terrestrial human life, there is some deformation and displacement of tissues and organs in the direction of the vector of the operative force of weight. As a result there is always a noticeable mechanical stress on the body's structure. A large number of muscle groups, ligaments and some joints are constantly at work, independently of the position of the human body (sitting, standing, laying). This work is carried out through tonic (constant) stress of the so-called antigravitational musculature, called upon in normal conditions to correct the effects of the force of gravity.

Under the influence of weight the internal organs also attempt to move in the direction of the earth, pulling on the ligaments and their connections

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GUROVSKIY, N., and YEGOROV, A., KOMMUNIST 3 Oct 76 p 3

to bones. The liquid media of the organism produce additional pressure in regions of their concentration. Numerous neural receptors, located in muscles, ligaments, internal organs, vessels, and so on, send impulses to the central nervous system, signaling about the position of the body. These signals also come from the vestibular apparatus, located in the internal ear.

However, in prolonged space flight and its unavoidable attribute, weightlessness, the body and its various parts have no weight. In such a condition the receptors of muscles of internal organs, ligaments, and vessels work "in another key." Information on the body's position arrives mainly from the visual analyzers. The interaction of the space analyzers (vision, vestibular apparatus, muscular sense, and others) which have been developed to precision over the prolonged period of the body's evolution are disturbed. All cosmonauts note that if they close their eyes in weightless conditions they lose their orientation of the position of the body in space. Consequently, in weightlessness, the organs of vision have a leady role in spatial orientation.

However, the human body is an extremely versatile structure and, after some time in weightlessness, there is a restoration of coordination between

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GUROVSKIY, N., and YEGOROV, A., KOMMUNIST 3 Oct 76 p 3

systems. The functioning of the internal organs is adjusted on a functional level, however, in a new and different way than on earth.

The lack of weight or hydrostatic blood pressure is also an important factor causing a number of changes in the human organism in weightless conditions.

In ordinary conditions of terrestrial existence, when the individual is standing in a vertical position, the blood, due to its weight, moves to the lower parts of the body; (the legs and lower parts of the abdomen). The organism has developed a system of defense measures preventing this displacement (contraction of the vessels, muscle groups and others). In weightlessness there are no forces other than the energy of the heartbeat which can move the blood to the lower parts of the body. As a result there is a flow of the blood to the head and the organs of the chest.

The increase in blood volume and the strain on the central veins and auricles are factors signaling the central nervous system that it is necessary to engage mechanisms assisting the reduction of excess fluid in the blood. As a result there are a number of reflex reactions leading to the excretion of liquid

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GUROVSKIY, N., and YEGOROV, A., KOMMUNIST 3 Oct 76 p 3

and salts from the organism. In the final account there can be a reduction of the quantity of some salts, in particular, common metabolic potassium, an electrolyte with an extremely diverse role.

These theoretical ideas on the mechanisms of change of some of the human body's functions in weightlessness are naturally only outlines, all of their aspects have not yet been substantiated by experiment. Only a knowledge of all the characteristics of the body's reactions and their causes will permit the construction of a properly operating system of preventive measures maintaining cosmonauts' high work capabilities. In order to explain the mechanisms of a factor's effects on the body one conducts numerous experiments, modeling this factor in laboratory conditions. However, it is not possible to reproduce prolonged weightlessness on earth. This is why space flight, including the flight of Salyut-5, is of colossal interest.

After prolonged space flights one can observe changes in cosmonauts' walking, difficulties in maintaining a vertical position, and sharply increased cardiovascular system reactions to change from a horizontal to a vertical position. These are explained by bodily loss of some abilities after prolonged

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GUROVSKIY, N., and YEGOROV, A., KOMMUNIST 3 Oct 76 p 3

presence in weightlessness.

Thus, upon return to earth, the blood again moves downward to the lower extremities. However, the mechanism which usually prevents this has lost some of its capabilities. Therefore larger than usual amounts of blood may accumulate in the lower part of the body. As a result there is a flow of blood from the brain which can considerably reduce arterial pressure and cause faintness. That is, one will observe that state which, apparently, the majority of people experience when, after illness and prolonged bed rest, they abruptly stand up. Physicians recommend beginning therapeutic exercises while laying in bed, and that patients rise very carefully.

It is also considered necessary to keep up such habits as walking, running, and jumping. With this goal in mind a special complex stand for physical training, the "running track" was developed under terrestrial conditions and installed on board the Salyut station. It reproduces, in weightlessness, movements characteristic for running, walking, and jumping, squatting, and lifting weights. In carrying out the "cosmic exercises," the crew members of the Salyut station wear special suits and elastic retarding straps which

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USSR

GUROVSKIY, N., and YEGOROV, A., KOMMUNIST 3 Oct 76 p 3

attach them to the support board of the device with a force of 80 kg., this ensures loading on specific groups of muscles, mainly along the longitudinal axis of the body. In contrast to previous flights, there is tape-recorded music during physical exercises on the Salyut-5. Performing the assigned work on the training stand also permits the evaluation of changes in cosmonauts' capabilities for physical work during the flight.

Another preventive measure is the wearing of special load creating suits which, through the installation of elastic straps, create a load on the bone and muscle system during the cosmonauts' movement and thus to some extent make up the lack of that load which under natural terrestrial conditions is created by the maintenance of a vertical position. Cosmonauts carry out physical exercises with great satisfaction and approve the wearing of load creating suits.

The method of creating reduced pressure in the lower parts of the body should be mentioned among the other prevention measures used on board the Salyut orbital stations. The so-called "vacuum capacity" is used for this. With the help of this device the lower part of the body is hermetically isolated

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from the external atmosphere and a slight vacuum is created. This draws the blood to the legs. This helps to some extent to recreate that distribution of blood which is characteristic for people standing in a vertical position on earth.

The recently completed flight of pilots-cosmonauts B. Volynov and V. Zholobov on the Salyut-5 is of very major significance for solving a number of medical problems. On previous orbital station flights, quite diverse research has been carried out, showing that the adaptation of the body to the conditions of weightlessness is accompanied by a pattern of reactions of the body. However, as has been mentioned, they are expressed differently in different cosmonauts.

In different people, the process of adaptation to flight conditions takes place in varying lengths of time. It is important to attempt to determine the causes of these individual differences. In this connection it is not only necessary to obtain information on the body's reactions while in space, but, also, to carry out specific studies and systematize the most important phenomena

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GUROVSKIY, N., and YEGOROV, A., KOMMUNIST 3 Oct 76 p 3

of the body's reactions to various lengths of flight. In addition to its great theoretical interest, this approach has important practical significance for predicting changes and describing the nature of each individual's process of adaptation to the flight conditions and for selecting individuals who can easily deal with work in space flight. We will explain this idea.

A study is now made, during the process of flight training, of the characteristics of the physiological reactions of cosmonauts, or to express it more vividly, a "physiological portrait" is drawn in the form of a mosaic of numerous indicators of the basic functions of the body. Later, comparisons of the character of this physiological portrait or "image" are made with respect to changes in physiological indicators resulting from the effects of certain factors of space flight modeled under ground conditions. This, to some extent, permits forecasting the expected reaction in a real flight. In addition to this, through a sufficient number of observations one can find a relation between preflight and flight "physiological portraits" of various cosmonauts. Then all cosmonauts who have made flights can be divided into groups depending on the nature of their reactions during the flight adaptation process.

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Apparently, cosmonauts ready for flight and having suitable "portraits" will react to similar flight conditions in roughly the same way.

However, in order to solve this task and to further study reactions to flight conditions in various periods of adaptation it is necessary to accumulate a sufficiently large amount of statistical material. The flight on the Salyut-5 orbital station is of great significance in this regard.

Equipment intended for real time medical supervision and intensified medical research has been installed on the Salyut orbital stations. In actuality, a complete laboratory for functional diagnosis which is equivalent to similar laboratories in modern clinics has been installed on board.

On the Salyut-5 there are also special 24 hour medical periods for real time supervision of cosmonauts' conditions during which very extensive observation is carried out.

This flight, as well as the flights of cosmonauts V. Bykovskiy and V. Aksenov will undoubtedly expand our knowledge of the physiological reactions of the human body under weightless conditions. An analysis of these reactions can

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GUROVSKIY, N., and YEGOROV, A., KOMMUNIST 3 Oct 76 p 3

help in more thoroughly understanding the mechanisms of readaptation to terrestrial conditions and make it possible to evaluate the efficiency of preventive measures and equipment.

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USSR/BULGARIA

UDC 616.281-07:612-015

KEKHAYLOV, A. N., professor, doctor of medical sciences, Sofiya, Bulgaria

INVESTIGATION OF THE BLOOD LEVELS OF SUGAR, CHLORIDE IONS AND CHOLESTEROL IN PILOTS BEFORE AND AFTER VESTIBULAR STIMULATION

Kiev ZHURNAL USHNYKH, NOSOVYKH I GORLOVYKH BOLEZNEY (Journal of Ear, Nose and Throat Diseases) in Russian No 5, Sep/Oct 76 pp 21-24

[Abstract] Changes in the blood levels of sugar, chloride ions and cholesterol were studied on 61 pilots prior and after vestibular stimulation achieved by introducing 100 cc of 20°C water into each ear during a period of 10 minutes. This stimulation resulted in spontaneous hyperglycemia, hyperchloremia and hypercholesteremia, analogous to changes seen in patients with vestibular disorders. These changes were not all unidirectional--they varied. An assumption has been made that mechanical actions upon the pilots change their bioenergetic processes as well as processes of an oxidation-reduction type, resulting in slight but chronic deviations of the endocrine glands from normal performance, leading eventually to an early aging process of these pilots. No tables or figures; references 15: 6 Russian, 9 Western.

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USSR

UDC 628.37:061.3(47+57)"1975"

KULAGIN, V. F., Moscow

ALL UNION SCIENTIFIC RESEARCH CONFERENCE ON "THE USE OF EFFLUENTS FROM CATTLE BREEDING FARMS AND COMPLEXES FOR AGRICULTURAL IRRIGATION"

Moscow GIGIYENA I SANITARIYA (Hygiene and Sanitation) in Russian No 9, Sep 76 pp 110-111

[Abstract] The conference was held 5-6 Jun 75, the following papers being presented. SHTEPA, B. G., talked about "Fulfillment of the decisions of 24th Session of the CPSU on formation of a feeding base for cattle breeding." He noted the formation of new breeding centers but with it an insufficient effort for the utilization of manure for agricultural purposes. NOVIKOV, V. M. addressed the problem of proper ratio of the grazing area to animal density, while PEROTSKAYA, A. S., criticized the approach to the purification of effluents for agricultural purposes, which were based on the same requirements as the purification of drinking water. GRISHAYEV, I. D. reported on a disinfection method for liquid fertilizer, while VARAVIN, I. D. analyzed the use of

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KULAGIN, V. F., GIGIYENA I SANITARIYA No 9, Sep 76 pp 110-111

effluents in irrigating agricultural areas. CHEREPANIV, A. A. noted that the use of liquid fertilizer may infect the soil and plants with pathogens. Other similar papers were presented by a number of investigators stressing the need for development of better disinfection methods for the effluents. No tables, figures or references.

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USSR

UDC 631.55+001.18:541.144

ZAKRZHEVSKIY, P. I., candidate of technical sciences, Byelorussian Scientific Research Institute for Reclamation and Aquaculture

A YIELD MODEL BASED ON PHOTOSYNTHESIS

Moscow DOKLADY VASKhNIL in Russian No 6, Jun 76 pp 14-15

[Abstract] A model for crop rotation and harvesting was calculated for providing optimal parameters in reclamation projects. Factors involved in the formulation are the magnitude of potential photosynthetic radiation per surface unit; growth rhythm as determined by particular hybrid features, constant features of the environment including water, heat, and nutrients; the dependency of plant growth on relative humidity, temperature and nutrients, forming a bell-curve; the growth of foliage in specific growth periods and its dependence on expanding photosynthesis, and accumulation of nutritive substances in seeds or rhizomes, determining the initial photosynthetic apparatus. Results indicate both the need for constant water quantities and the continued fluctuations in growth even when water is constant in supply. The variations

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ZAKRZHEVSKIY, P. I., DOKLADY VASKhNIL No 6, Jun 76 pp 14-15

can be eliminated partially by controlling heat. The model developed should form a basis for a technical and economic set of parameters for reclamation systems and standards for planning and other purposes. Tables 3; references 4 (Russian).

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USSR

UDC 633.31 + 631.52/.53

LUPASHKU, M. F., corresponding member of VASKhNIL; LALA, M., The Moldavian Scientific Research Institute for Field Crops; and ZHURAVLEV, A., candidate of agricultural sciences, All-Union Scientific Research Institute for Feeds imeni V. R. Vil'yams

#### THE ORGANIZATION OF COMMERCIAL SEED GROWING FOR PERENNIAL GRASS SEEDS

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 8, Aug 76 pp 48-53

[Abstract] The study presents biological characteristics and evaluations of forage and seed production for varieties of northern hybrids in Moldavia. Agrotechnology is presented for the alfalfa hybrid Severnaya 69 along with an evaluation of its seed potential. Tests were made on spring plantings with 45 cm furrows planted at 8 kg/ha, as well as in row plantings using 20 kg/ha. Results indicated that the varieties differed in length of growing season, cutting qualities, growth dynamics, formation of vegetative mass, seed and forage production, and overall production. The vegetation periods ranged between 107 and 138 days, with earliest ripening in the variety Yygeva 118 and

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USSR

LUPASHKU, M. F., LALA, M., and ZHURAVLEV, A., VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI No 8, Aug 76 pp 48-53

the latest, Saarema. All but the latter surpassed seed production standards. The best planting time was indicated to be spring, and the best method, wide row (45 cm) plantings. There were insufficient pollinators in the flowering period for the first cutting, with only 22.6-30.5 percent being pollinated; in the second cutting much better results were obtained, with 62.1-88.3 percent pollination. On the other hand, the lesser stands of second cuttings meant fewer racemes and, consequently lesser seed production. Flower gnats also damaged the seed harvest in the second cuttings. Tables 5.

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USSR

UDC 631.527 + 633.1 + 631.587

BREZHNEV, D. D., hero of socialist labor and academician, VASKHNIL, DOROFEYEV, V. F., doctor of agricultural sciences, and TROFIMOVSKAYA, A. YA., doctor of agricultural sciences, All-Union Order of Lenin and Order of Peoples Friendships Scientific Research Institute for Plant Breeding imeni N. I. Vavilov

SELECTING GRAIN CROPS FOR IRRIGATED AGRICULTURE AND THE ROLE OF WORLDWIDE COLLECTION

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 8, Aug 76 pp 27-40

[Abstract] Crop losses often occur in the Soviet Union due to drought. Vast regions in the south and southeastern parts of the USSR that are particularly important in producing grains are those most often subjected to lack of moisture. Other problems are found in the more than half of Soviet cropland for grains that is located in semi-arid regions, where irrigation is essential for high, stable grain production. Yet with irrigation and application of mineral fertilizers, consistently high yields can be obtained. Hybrids specially selected and developed for particular regions play an important role, and with that in mind the present study was made of hybrid grains available from such countries as the United States, India, Canada, Sweden, the Germanies and Mexico, among other countries. These hybrids were then tested at various experimental

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USSR

BREZHNEV, D. D., DOROFEYEV, V. F., and TROFIMOVSKAYA, A. YA., VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI No 8, Aug 76 pp 27-40

stations throughout the USSR, including varieties of barley, oats, and wheat. The results indicate some directions in plant breeding to be pursued in the tenth Five-Year-Plan. The All-Union Institute for Plant Breeding has gathered materials for research and conducted such research for many years, and will continue in the coming period. Tables 12; references 13 (Russian).

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USSR

UDC 631.153.3(470.31)

VOROBYEV, S. A., doctor of agricultural sciences, and SAFONOV, A. F., candidate of agricultural sciences, Moscow Order of Lenin and Order of Labor's Red Banner Agricultural Academy imeni K. A. Timiryazev

WATER USE AND PRODUCTIVITY OF PLANTS IN SPECIALIZED AREAS OF NON-CHERNOZEM CROP ROTATION

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 8, Aug 76 pp 17-26

[Abstract] Despite wide use of mineral fertilizers, herbicides, fungicides and other means of plant protection, wide variations in crop production still occur. The present study sought to determine optimal periods for irrigation. Tests were conducted at the academy's experimental farm in Moscow Oblast using eight different variations of crop rotation involving clover, winter wheat, barley, potatoes, and corn for silage. Three agrotechnical variants used included average application of fertilizers + herbicides, and calculated fertilizer applications with and without herbicides. Results indicated that crop rotation had no effect on assuring water supply. A soil layer 20-30 cm in thickness dried under grain crops at the heading phase, and under potatoes

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VOROBYEV, S. A., and SAFONOV, A. F., VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI No 8, Aug 76 pp 17-26

at the tuber-formation stage. The highest water use coincided with stalk formation in grains and buttoning in potatoes. At this time irrigation aids optimal utilization of soil moisture. Total water use was somewhat greater for rotated wheat, barley and potatoes than for unrotated plantings, with general weather conditions and length of growing season having an important role. Crop yields proved to be more closely related to moisture availability at critical periods than to total annual water use. In the central non-chernozem region, 67 percent of area can be planted to grain crops in rotation, and up to 50 percent to potatoes. The negative impact of non-rotation results from biological causes rather than from moisture supply. Tables 8; references 11 (Russian).

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USSR

TASS, Semipalatinsk

PROTEIN CONCENTRATE

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 9 Oct 76 p 2

[Translation] A new process for obtaining protein-fat concentrate (PFC) has been developed by Kazakh scientists. Rich in protein, the concentrate is used to increase the nutritive value of mixed fodder.

The industrial production of PFC has been mastered at the Semipalatinsk Meat Preserving Combine. During the current Five-Year plan, 290 tons of the concentrate will be produced. It will also be produced at other enterprises of the republic's meat and dairy industry.

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USSR

GELENOV, A., Manager, Department for Agrotechnology of Grain and Fodder Crops, Turkmen Scientific Research Institute for Agriculture

MORE FODDER FOR ANIMAL HUSBANDRY

Ashkhabad TURKMENSKAYA ISKRA in Russian 11 Sep 76 p 1

[Translation] The speech of General Secretary of the CPSU Central Committee Comrade L. I. Brezhnev at the meeting of party economic activists of Kazakhstan is a broad program of action, not only for workers in agriculture but also for scientists, who must stand in the vanguard in the struggle for comprehensive improvement in the efficiency of agricultural production. This is why we are once more carefully examining our plans.

Leonid Il'ich stressed in his speech that it is necessary to increase the production of soybeans, an excellent protein fodder crop. We, too, can grow soybeans in our republic. Our institute is studying various varieties of this crop. We are now looking for the most suitable variety, taking climatic conditions into consideration. We must study agronomic techniques for this crop

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GELENOV, A., TURKMENSKAYA ISKRA 11 Sep 76 p 1

and select new varieties of fodder from foreign lands similar in climate to our republic.

A new pulse crop, dolikhos, which produces up to 500 centners of bulk green fodder per hectare, can also help make up the protein deficit in fodder.

We are giving much attention to the multiear corn grown in Georgia. Research carried out by institute personnel permits one to conclude that instead of after-harvest sowing of winter rye it would be advantageous and convenient to plant winter oats. They produce more than 350 centners of bulk green fodder per hectare.

These and other research projects, as well as the very rapid introduction of scientific achievements into production will help strengthen the fodder base of animal husbandry.

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USSR

MATUKOVSKIY, N.

ON RECOMMENDATIONS OF COMPUTERS

Moscow IZVESTIYA in Russian 8 Sep 76 p 2

[Translation] Minsk, Belorussian geneticists have created an original mathematical model for a computer. It permits, without prolonged and expensive experiments, the selection of the optimal "parental" pair for obtaining high yielding progeny.

The model was tested for several years at the Institute of Genetics and Cytology of the Academy of Sciences of the Belorussian SSR, and its efficiency was proven. It has now been sent to selection centers in order to create new varieties of wheat, corn, sorgum, and cotton.

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USSR

UDC 577.153.2

RAKHIMOV, M. M., DZHANBAYEVA, and BEREZIN, I. V., corresponding member, Academy of Sciences, USSR Moscow State University, and Central Asian Scientific Research Institute of the Food Industry, Tashkent

SUBSTRATE SPECIFICITY OF IMMOBILIZED LIPASES

Moscow DOKLADY AKADEMII NAUK SSSR in Russian No 6, 1976 signed to press 19 Mar 76 pp 1481-1484

[Abstract] Immobilization of lipolytic enzymes, cotton lipase and pancreatic lipase, on powdered polyamide decreased their activity during hydrolysis of higher triglycerides and shifted the optimum pH to the alkaline side. The immobilized lipases proved to be more stable than their soluble precursors. Both were gradually inactivated at 50°. The activity of the immobilized lipases decreased much more slowly thereafter and remained virtually unchanged for an hour. Thus, changes in the activity, stability, and optimum pH of the immobilized lipases were about the same as in most other hydrolytic enzymes. The activity of the lipases with soluble substrates after immobilization did not change significantly. But it decreased with insoluble substrates because

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USSR

RAKHIMOV, M. M., DZHANBAYEVA, and BEREZIN, I. V., DOKLADY AKADEMII NAUK SSSR No 6, 1976 pp 1481-1484

insolubilization of the lipases made contact with the insoluble substrate difficult. Figures 4.

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USSR

UDC 612.015.31:[546.33]"52"

ZASLAVSKAYA, R. M. and RADCHENKO, L. P., Moscow Municipal First Aid Hospital  
No 53

CIRCADIAN RHYTHM OF ELECTROLYTE (POTASSIUM AND SODIUM) METABOLISM IN HEALTHY  
PERSONS OF DIFFERENT AGES

Moscow LABORATORNOYE DELO in Russian No 7, 1976 signed to press 4 May 75 pp  
409-412

[Abstract] A daily periodicity was detected in serum potassium and sodium levels in apparently healthy persons age 20 to 76 years, with marked differences between the young (under 27) and the old (36-76) groups. In the younger persons, the plasma potassium concentration increased significantly in the day, and K in RBC in the evening. The excretion of sodium and potassium was lowest during the night. The older individuals showed a significant decrease in serum potassium levels and in the amount of sodium excreted during the night. The sodium concentration in the RBC decreased during the day and evening while potassium excretion increased during the day. Tables 2; references 11: 9 Russian, 2 Western.

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USSR

UDC 616.127-005.8-07:616.153.1:577.152.3

TROFIMOV, G. A., SKORIK, V. I., STREZHNEVA, G. YU., SEVRUK, YU. A., and  
KOROVKIN, B. F., Military Medical Academy imeni S. M. Kirov, Leningrad

ACTIVITY OF ACID HYDROLASES IN MYOCARDIAL INFARCTION

Moscow LABORATORNOYE DELO in Russian No 7, 1976 signed to press 17 Jun 75  
pp 399-401

[Abstract] The activity of lysosomal enzymes was found to be high in the serum of patients with myocardial infarction, the degree varying with the depth and extent of myocardial necrosis. Acid phosphatase and cathepsin D activities were highest in those with transmural infarction complicated by cardiogenic shock, lung edema, aneurysm, etc. In patients who subsequently died of the infarction, acid phosphatase activity was 64.6% higher in the necrotic area of the heart than in "intact" portions. Figure 1; tables 2; references 7: 3 Russian, 4 Western.

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USSR

UDC 576.8.09.5:577.12.12+577.3

MINKEVICH, I. G. and YEROSHIN, V. K., Institute of Biochemistry and Physiology of Microorganisms, Academy of Sciences USSR, Pushchino, Moscow Oblast

CHARACTERISTICS OF INTRACELLULAR MATERIAL AND ENERGY BALANCE IN THE GROWTH OF MICROORGANISMS

Moscow USPEKHI SOVREMENNOY BIOLOGII in Russian No 1(4), 1976 pp 103-116

[Abstract] The interdependence of the growth characteristics of microbial populations (biomass, specific growth rate, etc.) and the effect of the organic substrate and its metabolism in a given microorganism on these characteristics were studied by a method based on the use of a special unit of quantity (equivalent of available electrons) that reflects the energy supply of organic compounds. Formulas are proposed for expressing macroscopic characteristics of microbial growth by quantitative indices reflecting the functioning of individual biochemical system. The method used to calculate the characteristics is based on equations of the material and energy budget and it can be applied to any substrate, microorganism, metabolic product, or conditions of cultivation. The equations can also be used to isolate the biochemical factors that

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USSR

MINKEVICH, I. G. and YEROSHIN, V. K., USPEKHI SOVREMENNOY BIOLOGII No 1(4), 1976 pp 103-116

actually affect growth. References 25: 3 Russian, 22 Western.

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USSR

UDC 551.321.1:577.3:523.78:536.48:611-018.46

PUSHKAR', N. S., BRONSHTEYN, V. L., and ROZANOV, L. F., The Institute for Problems in Cryogenic Biology and Medicine, the Academy of Sciences of the Ukrainian SSR, Khar'khov

THE MECHANISM OF DEHYDRATION IN FROZEN CELLS DURING WARMING

Moscow DOKLADY AKADEMII NAUK SSSR in Russian No 231, No 1, Sep/Oct 76 signed to press 13 Feb 76 pp 217-219

[Abstract] The study observed changes in cellular dimensions during freezing and thawing at various rates through use of cryomicroscopy, and determined that dehydration can occur during both freezing and thawing with equally serious effects. The cause of dehydration in freezing is the concentration of extracellular fluid due to frost vaporization of ice in the frozen specimen. The dimensions of cells were found to decrease in the freezing-thawing process by as much as 1/3 at slow rates of freezing, but at fast freezing rates no significant change was recorded. After rapid freezing, dehydration was recorded during slow thawing but very little dehydration occurred with rapid thawing. The faster the thawing process, the less time required for changing  
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USSR

PUSHKAR', N. S., BRONSHTEYN, V. L., and ROZANOV, L. F., DOKLADY AKADEMII NAUK SSSR No 230, No 1, Sep/Oct 76 pp 217-219

from the temperature of the eutectic phase to the temperature of complete disappearance of the solid phase, and the less cell dehydration. Figures 2; references 7: 2 Russian, 5 Western.

USSR

UDC 617-001.4-021.4-092.9-085.849.19

AVERBAKH, M. M., SORKIN, M. Z., DOBKIN, V. G., KOSAREV, I. I., OSTAPCHENKO, YE. P., NISTRATOV, V. I., GULYAYEV, A. A., and SEMEYKIN, A. P., Laboratory of Experimental Pathology and Surgery of the Central Scientific Research Institute of Tuberculosis, Ministry of Health USSR, Moscow

#### EFFECT OF A HELIUM-NEON LASER ON THE HEALING OF ASEPTIC EXPERIMENTAL WOUNDS

Moscow KHIRURGIYA I ANESTEZIOLOGIYA (Surgery and Anesthesiology) in Russian No 3, May/Jun 76 pp 56-59

[Abstract] Irradiation with helium-neon laser has a dose-related effect on the reparative process ranging from none to a definite stimulation of the healing. The optimal energy dose accelerating the healing process of aseptic experimental wounds is  $0.54 \text{ J/cm}^2$  used daily, resulting in diminished degenerative-inflammatory phase. Later phases, concerned with healing of skin-fascia wounds, become substantially accelerated; a well developed normal epithelium and dermis are formed along with porous subcutaneous connective tissue. Figures 4; table 1; references 12: 10 Russian, 2 Western.

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USSR

UDC 580

CHISTYAKOV, I. G., USOL'TSEVA, V. A., SELEZNEV, S. A., and MAKSIMOVA, N. M., Institute of Crystallography imeni A. V. Shubnikov, Academy of Sciences USSR, and Ivanovo State Medical Institute

#### LIQUID CRYSTALS AND THEIR BIOLOGICAL SIGNIFICANCE

Moscow USPEKHI SOVREMENNOY BIOLOGII in Russian No 1(4), 1976 pp 89-102

[Abstract] Liquid crystals, liquids with structural properties intermediate between those of a solid crystal and those of a liquid, are biologically essential. They combine the regular arrangement of structural components and the stability of the liquid crystal form with high adsorbing activity, sensitivity to external factors, ready substitutability of structural components, and capacity to swell without loss of liquid crystal organization. DNA, myosin, collagen, cholesterol, nervous tissue, etc. have liquid crystals. The metabolic processes are inseparably bound up with the functions of liquid crystal structures. Metabolic disturbances in some pathologies result in liquid crystals accumulating in inappropriate tissues, e.g., cholesterol in atherosclerosis, diabetes, cataract, cholelithiasis, etc. Figures 4; references 62: 20 Russian, 42 Western.

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## Entomology

USSR

KAMOLOV, V. I.

SPECIES COMPOSITION AND ECOLOGY OF THE MOSQUITO p. Aedes IN CONNECTION WITH REGULATION OF THE LOWER COURSE OF THE VORONEZH RIVER

PROBL. IZUCH. I OKHRANY LANDSHAFTOV in Russian No. 2 Voronezh 1975, pp 51-54

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No. 8, 1976 Abstract No. 8.36.55 by A. S.]

[Text] In connection with the formation of a reservoir and flooding of bodies of water in 1972, the number of mosquitoes in the city of Voronezh was decreased, but in the region of the upper water of the reservoir, the mosquito population increased. In places, residual flooded bodies of water served as breeding grounds for mosquitoes. Four new species of mosquitoes, not detected before in Voronezh Oblast, are found. 2 references

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## Environmental and Ecological Problems

USSR

EDITORIAL

BIOSPHERE PROTECTION DOCUMENT

Kiev POD ZNAMENEM LENINIZMA (Under the Banner of Leninism) in Russian No 10,  
May 76 pp 60-62

[Abstract] This is a round-robin report of several chairmen of the Sanitation-Hygiene Faculty at the Kiev Medical Institute, covering the problem of hygienic standardization. A. M. Shevchenko discussed control measures in the field of plastics, where attention is given to epoxy and chlorovinyl polymers, so very much popularized in recent years. R. D. Gabovich covered the problem of water purification noting that fluoridation results in definite decrease of dental caries. Yet, at higher concentrations in soil and in water, fluorine leads to the development of fluorosis. Partly because of this, ozonization has been experimented with as a potentially universal method for purifying water. I. V. Savitskiy addressed the problem of pesticide traces in food products. Even though new, safe pesticides have become available, the determination of

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USSR

EDITORIAL, POD ZNAMENEM LENINIZMA No 10, May 76 pp 60-62

their maximal permissible levels must continue. The final point was made by E. I. Goncharuk who concentrated on the soil preservation measures, since the soil, in addition to water and air, is an extremely important component of our environment, continuously being contaminated by man. Models for all types of soils are now available in which studies can be performed leading to establishment of regulatory measures for chemicals in soil. No figures, tables or references.

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USSR

YEGIAZARYAN, S. V.

FIRST REPUBLIC CONFERENCE ON METHODS OF ESTIMATING THE EFFECTS OF ENVIRONMENTAL POLLUTION ON MAN

Yerevan BIOLOGICHESKIY ZHURNAL ARMENII in Russian No 7, 1976 pp 105-106

[Abstract] The above conference was concerned chiefly with the development of methods for assessing mutagenesis and forecasting the genetic consequences of extreme external factors on human populations. The subjects discussed included: interrelationship of the mutagenic, carcinogenic, and allergenic effects of some toxic chemicals and drugs ingested, inhaled, absorbed through the skin, etc. (G. G. Batikyan), molecular processes triggered in the cell by external factors (M. G. Oganessian), problems in studying the genetic effects of chemical compounds on human and animal chromosomes and genes (R. M. Arutyunyan), main characteristics of balanced populations under conditions of environmental pollution (A. S. Zurabyan), investigation of drugs for mutagenic activity (G. M. Paronikyan), prevention of human contact with some industrial chemicals known to be mutagenic (E. A. Babayan), and some theoretical and methods aspects of solving ecological problems (B. V. Megrabyan).

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USSR

UDC 614.777:621.311.2(047)

NOVIKOV, YU. V., doctor of medical sciences, KUDRIN, L. V., candidate of medical sciences, and PUSHKINA, N. P., Moscow Scientific Research Institute of Hygiene imeni F. F. Erisman

HYGIENIC PROBLEMS IN PROTECTING WATER RESERVOIRS FROM CONTAMINATION BY THERMAL ELECTRIC POWER STATIONS

Moscow GIGIYENA I SANITARIYA (Hygiene and Sanitation) in Russian No 9, Sep 76 signed to press 17 Feb 76 pp 84-88

[Abstract] Increased reliance on electric power makes it unavoidable for more power stations to be built. Most of them are projected to be thermal and atomic power electric stations (TES and AES). Such operations lead to unavoidable contamination of water reservoirs with chemicals and heat being dumped into the system, resulting in undesirable or even dangerous properties being imparted to drinking water. The effluents from thermal electric power stations therefore should be properly purified before being dumped into water basins. The stations themselves should be located so as not to overload a certain area with waste dump. Finally even the contamination of the atmosphere must be

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USSR

NOVIKOV, YU. V., KUDRIN, L. V., and PUSHKINA, N. P., GIGIYENA I SANITARIYA  
No 9, Sep 76 pp 84-88

considered, since eventually air contamination will find its way into the drinking water reservoirs. No tables or figures; references 12: 8 Russian, 4 Western.

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USSR

ZOLOTNITSKIY, N., professor, doctor of technical sciences

CHAIR OF LABOR PROTECTION

Moscow OKHRANA TRUDA I SOTSIAL'NOYE STRAKHOVANIYE (Labor Protection and Social Security) in Russian No 10, Oct 76 p 32

[Abstract] Improved preparation of specialists in the area of labor and environment protection depends first of all on the availability of specialized courses of studies. This is being done at the Leningrad Technological Institute of Cellulose-Paper Industry. A wide range of preparatory courses is available for engineers; currently the goal is to prepare specialists in sewage purification and control of gaseous emissions. Continuous effort is extended to minimize industrial contamination. Students are encouraged to participate actively in these activities. The faculty works enthusiastically on theoretical subjects, prepares future professionals, and develops novel approaches to this very difficult problem. For these efforts the faculty was awarded a citation. No tables, figures or references.

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## Epidemiology

BULGARIA/USSR

GEORGIYEV, P., CHAKOV, B., RIBAROVA, N., GACHEVA, N.

LETHALITY OF INFECTIOUS DISEASES IN BULGARIA IN 1972-1973

PROBL. ZARAZN. I PARAZIT. BOLESTI in Bulgarian 1975, No. 3 pp 13-21

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No. 8, 1976 Abstract No. 8.36.29 by L. Amiantova]

[Text] Analysis of statistical data on the mortality of infectious diseases in 1960-1973, annual reports of regional hospitals and death certificate data on death from infectious diseases in 1972 and 1973. Among the causes of death are viral hepatitis, tetanus and epidemic meningitis, recorded almost with identical frequency (except for tetanus in children) in all age groups. 50% of those who died from tetanus were persons over 60 years of age. The greatest number of persons who died from dysentery were children up to one year of age and persons 60 years of age and older. Individual cases of death due to scarlet fever and smallpox were recorded. (Center for Infectious and Parasitic Diseases, Bulgaria)

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USSR

YES'KOV, V. M.

ANALYSIS OF THE STABILITY OF ECOLOGICAL SYSTEMS AGAINST EPIZOOTIES

PRIMENENIYE SISTEM. ANALIZA V PRIKL. ZADACHAKH in Russian Kuybyshev, 1976  
pp 137-141

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No 8 1976 Abstract  
No. 8.36.10 by E. Raykh]

[Text] A study of the dynamics of propagation of various diseases and their influence on the stability of epizootic systems. Various types of propagation of noninfectious and non-immune infectious diseases under conditions of intra-species and interspecies competition are studied. The study is performed on deterministic models. Modeling of processes is performed in all cases as applicable to epizooties. In spite of the highly preliminary nature of the results produced, they indicate the possibility and usefulness of the mathematical-physical approach to the study of the dynamics of disease propagation in ecological systems. A number of the conclusions produced in the modeling are interesting: ecological systems are more stable against infectious than against noninfectious diseases; the results of epizooties to a significant

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USSR

YES'KOV, V. M., PRIMENENIYE SISTEM. ANALIZA V PRIKL. ZADACHAKH 1976 pp  
137-141

extent depends on the moment of their beginning; epizooties of species-specific diseases among predators are less dangerous for ecosystems than epizooties among prey (this is confirmed by practice). Analysis of a model with certain approximations can be used in sociology, for modeling of the process of propagation of fashion, religion, opinion in societies with limitations and competition among individual groups and societies.

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USSR

BARYSHEV, P. M., PELIKHOVA, K. I.

PROBLEMS AND METHODOLOGICAL QUESTIONS OF THE EPIDEMIOLOGIC GEOGRAPHY OF  
ALTAY KRAY

GEOGR. PRIPODNOOCHAG. BOLEZNEY ALTAYSK. KRAYA in Russian Leningrad 1976,  
pp 3-8

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No. 8, 1976 Abstract  
No. 8.36.11 by T. V.]

[Text] The territory of Altay Kray is a universal model for the study of cause and effect connections between the status and dynamics of morbidity of the population and the factor of the geographic environment. Methodological approaches are studied toward further development of investigations of the epidemiologic geography of the Kray, the primary trends of which should be the study of the extent of infectious disease, determination of its correlation with natural, social and demographic factors, as well as the development of standardized indicators for evaluation of the intensity and dynamics of disease propagation. 18 references.

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USSR

SHADRIN, A. S.

THE ROLE OF CLIMATE AND GEOGRAPHIC AS WELL AS OCCUPATIONAL AND PRODUCTION  
FACTORS IN THE EPIDEMIC PROCESS IN RESPIRATORY INFECTIONS

VIRUSY I VIRUS. ZABOLEVANIYA. RESP. MEZHVED. SB. in Russian 1976, No. 4  
pp 67-69

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No. 8, 1976 Abstract  
No. 8.36.43 by L. Zakharova]

[Text] An evaluation of the degree of influence on morbidity of complexes of geographic and social factors integrated in the concepts "Union Republic," "branch of industry," "size of cities," and "climatic-geographic zone." Three epidemiologic forms of summary morbidity of influenza and acute respiratory diseases (ARD) are distinguished: The summer norm (minimum morbidity), seasonal increase over the summer norm and the increase in morbidity due to epidemics. The height of the summer norm of morbidity and the degree of increase due to epidemics depend to a great extent on the area of a city, the population (18.9 and 23.3% of all influences), more than on the nature of the

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USSR

SHADRIN, A. S., VIRUSY I VIRUS. ZABOLEVANIYA. RESP. MEZHVED. SB. 1976 No. 4  
pp 67-69

climate (for example, cold). The seasonal increase is significantly influenced by the coldness of the climate (41.0% of all influences)\*. The level of influenza and ARD morbidity in Arkhangel'sk and Murmansk is 45%, in years with no epidemics 68%, higher than in L'vov and other cities of the southwestern USSR. Data on the degree of influence of the city and rural population, workers and employees and climatic factors are presented.

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USSR

YACHMENEV, N. I.

THE STATUS AND PROSPECTS FOR THE STUDY OF DISEASES WITH NATURAL FOCI IN  
KALININGRAD OBLAST

PROBL. INFETSION. PATOL. in Russian Kaliningrad 1976, pp 32-35

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No. 8, 1976 Abstract  
No. 8.36.60 by A. Krasil'nikov]

[Text] 15 zooanthroponoses of bacterial, rickettsian, viral, spirochetal and helminthic origin have been detected in Kaliningrad Oblast. Tularemia was most widespread in 1946-1949, with over 3000 human patients in the Oblast. As a result of planned vaccination of the population, using live tularemia vaccine, the morbidity of tularemia among the population is presently practically zero. Leptospiroses were recorded in all agricultural regions and three cities: Kaliningrad, Sovetsk and Baltiysk. Since 1959, 153 cases of persons with diseases caused by four serological types of leptospira have been recorded: grippotyphosa, pomona, icterohaemorrhagiae and canicola. Cases of leptospirosis have been unevenly distributed over the territory of the Oblast: Kaliningrad --

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USSR

YACHMENEV, N. I., PROBL. INFEKTSION. PATOL. 1976, pp 32-35

35, Ozerskiy region -- 28, Nemanskiy region -- 19, Gur'yevskiy region -- 9, Zelenograd region -- 7, Gvardeskiy region -- 7 cases. The diseases have been particularly occupational in nature (52.9% of all diseases). 27.9% of all cases were parts of epidemic outbursts. Urban residents were infected primarily with the leptospira icterohaemorrhagiae and canicola (52.50), rural residents with grippotyphosa and pomona (54.5%). Between 1946 and 1964, 34 cases of tick encephalitis were recorded in Chernyakhovskiy, Slavskiy, Polesskiy and Zelenograd regions. Since 1964, tick encephalitis has not been officially recorded in the Oblast. Serological examination of 1465 persons and 1818 cattle in 47 populated points in 12 regions of the Oblast revealed specific antibodies to the virus of tick encephalitis in 8.9% of the persons examined and 7.1% of the animals. Rabies of wild and domestic animals in the area has been noted in all cities and agricultural regions. Human cases of rabies have been recorded in four cities (Kaliningrad, Sovetsk, Svetliy, Svetlogorsk) and 12 agricultural regions of the area (except for

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YACHMENEV, N. I., PROBL. INFEKTSION. PATOL. 1976, pp 32-35

Gvardeyskiy). Since 1964, cases of rabies among the residents of the area have not been recorded. Diphyllotriosis is mainly found among the mature population, though particular invasions of persons in high risk occupations has not been observed. Ornithosis was first recorded in June of 1972 among workers in the poultry section of the Chernyakhovskiy Meat Combine, where 15 persons became sick at the same time. It is believed that the source of infection was ducks arriving for slaughter from Nesterovskiy region, where in May of 1972 duck deaths were observed. Examination of 2712 persons by means of the complement fixation test using the ornithosis antigen revealed specific antibodies in 0.6% of cases. Q-rickets was not officially recorded in the Oblast. However, complement-bonding antibodies to Burnett's rickets were found in persons (2.4%) living in nine agricultural regions.

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USSR

BARYSHEV, P. M., VORONTSOVA, T. A., KUKLIN, V. V., GRANITOV, V. M.,  
FEDOROVA, N. I., NIKITIN, V. V.

RESULTS OF A MULTIANNUAL STUDY OF THE IMMUNOLOGIC INDICATORS OF THE  
POPULATION OF THE STEPPES OF ALTAY AGAINST LEPTOSPIROSIS AND CERTAIN  
NATURAL FOCAL DISEASES

GEORG. PRIPODNOOCHAG. BOLEZNEY ALTAYSK. KRAYA in Russian Leningrad, 1976  
pp 34-40

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No. 8, 1976 Abstract  
No. 8.36.61 by T. Vorontsova]

[Text] Examinations were performed by a combined expedition in 1966-1971.  
The highest immune level was found in relation to leptospirosis -- 28.4%  
(2783 persons examined) which, probably, results from the presence of  
significant anthropurgic foci of this infection in the territory studied.  
The etiological structure of leptospiroses models the propagation of patho-  
genic leptospirae among the agricultural animals; the serum groups hebdomadis,  
tarassovi and pomona predominated. The immune level in relation to epidemic

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USSR

BARYSHEV, P. M., VORONTSOVA, T. A., KUKLIN, V. V., GRANITOV, V. M.,  
FEDOROVA, N. I., NIKITIN, V. V., GEORG. PRIPODNOOCHAG. BOLEZNEY ALTAYSK.  
KRAYA 1976 pp 34-40

rickets was low: northern Asian tick typhus -- 1.2% (1681 persons examined),  
Q-rickets 2.01% (2435 persons). 4789 persons were examined for tick  
encephalitis, with 4.5% positive reactions. Examination of persons with  
diseases similar to toxoplasmosis (720 persons) revealed 12.6% with a positive  
reaction to toxoplasmosis, while this indicator was 5.3% among the healthy  
populaton (1025 persons examined). 7 references.

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USSR

OBERT, A. S., VINOKUROV, YU. I.

COMPARATIVE DESCRIPTION OF CLINICAL COURSE OF TICK ENCEPHALITIS IN VARIOUS  
LANDSCAPES OF ALTAY KRAY

GEOGR. PRIRODNOOCHAG. BOLEZNEY ALTAYSK. KRAYA in Russian Leningrad, 1976  
pp 20-28

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No. 8, 1976 Abstract  
No. 8.36.65 by T. Vorontsova]

[Text] A study was made of the dependence between the content of Mn in the environment and the severity of the course of tick encephalitis in 172 patients (99 men and 73 women). With increasing Mn content in the environment, the number of mild, latent forms of the disease increases and the number of severe focal forms decreases. Whereas focal forms are encountered in an average of 18.6% of cases in the territory, in areas with deficiencies of Mn it is encountered in 28% of cases, in areas with excess Mn, only in 7%. An evaluation is presented of the groups compared as to a number of other indicators. 24 references; 3 tables.

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USSR

GORBUNOV, N. S.

MATERIALS ON LANDSCAPE EPIDEMIOLOGY OF TICK ENCEPHALITIS IN ALTAY KRAY

GEOGR. PRIRODNOOCHAG. BOLEZNEY ALTAYSK. KRAYA in Russian Leningrad, 1976  
pp 9-15

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No. 8, 1976 Abstract  
No. 8.36.64 by YA. Tsilinskiy]

[Text] The greatest morbidity of tick encephalitis in Altay Kray is observed in the northern and central Altay subzone (17.9 and 13.2 per 100000) and in the northern forested Steppe (7.9). In the Steppe zone, cases of tick encephalitis have not been recorded, while in the southern forested Steppe and in the western and southeastern Altay, low morbidity is noted. The risk factor for infection with tick encephalitis is indicated by the immune level and the degree of contact of the population with the tick responsible in the focus. According to the data of examination of 15,984 blood serum samples, the immune level among the population in various landscape-geographic zones of the Kray was: in northern Altay 26.3%, in western

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GORBUNOV, N. S., GEOGR. PRIRODNOOCHAG. BOLEZNEY ALTAYSK. KRAYA 1976  
pp 9-15

Altay 33.6%, in central Altay 31.5%, in southeastern Altay 15.4%, in the northern forested Steppe zone 26.3% and in the southern forested Steppe zone 8.1%. Determination of antibodies to the tick encephalitis virus in the population of the Steppe zone was individual in nature. The population of the Kray, based on working conditions and domestic factors, was closely related to visits to forested territories. The percentage of contact with ticks was particularly high in the Altay zone. In the forested Steppe zone, the most frequent contact of the population with ticks was observed in regions adjacent to Salair. 12 references.

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USSR

UDC 639.321:061.3

PRISS, V. N.

THE SECOND ALL UNION CONFERENCE ON MARINE CULTURE

Moscow RYBNOYE KHOZYAYSTVO in Russian No 6, Jun 76 pp 89-91

[Abstract] The conference, held in the city of Kerchi in January 1976, was devoted to scientific developments in the field of aquaculture, which has rapidly expanded as a source of the world's food. The discussions at the conference determined the following fundamental directions for investigations and experimentation in the coming five-year plan period: development and perfection of breeding stock and fry production; commercial breeding of aquatic plants and invertebrates on artificial farms and plantations, and of valuable fish species in sea farms; study of biological, geothermal and water conditions relating to seafood production; development of diagnostic, prophylactic, and treatment methods for bacterial and virus diseases of the seas; genetic research on hybrid fishes and sea invertebrates; hardware improvement in all aspects of the fishing industry; and a general overall plan for exploitation of the potential of maritime food production which will consider climatic, economic and ecological factors.

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USSR

UDC 664.957

BOKHAN, V. N., KARPOV, V. I., candidate of technical sciences, The Kaliningrad Polytechnic Institute for Fishing and Fisheries; ISAYEV, V. A., The Kaliningrad Fishing Administration; and DRAGILEV, A. I., candidate of technical sciences, the Moscow Technological Institute for Fishing

GRANULATED FEEDS FROM OCEAN PRODUCTS

Moscow RYBNOYE KHOZYAYSTVO in Russian No 6, Jun 76 pp 76-78

[Abstract] The geometric form of granules and their relative dimensions, as well as other physical and mechanical properties, are closely tied to the granulating process, transportation, storage and later pulverization at feed stations. Packing characteristics affect the volume required for shipping. The present study seeks to establish formulas for evaluating effective loading parameters for use in handling granulated feeds. Calculations were completed and then tested in investigations with model granules of 8, 12, 16, and 20 mm diameters. The models were prepared from materials with constant density. The investigations enable calculations of the economic efficiency of utilizing granulated feeds in vessels of the Kaliningrad refrigerated fleet. Graph 1.

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USSR

UDC 597.08

MESHKOVA, T. M., Sevan Hydrobiological Station, Academy of Sciences, Armenian SSR

EUTROPHICATION OF LAKE SEVAN

Yerevan BIOLOGICHESKIY ZHURNAL ARMENII in Russian No 7, 1976 signed to press 31 Mar 76 pp 14-22

[Abstract] The oligotrophic Lake Seven in Armenia showed the first signs of eutrophication in the 1950's when the water level fell 9 to 12 m. Changes in the hydrology and biology of the lake subsequently multiplied and intensified, adversely affecting the concentration of dissolved oxygen, composition of nutrient salts, water transparency, composition of phytoplankton, zooplankton, and zoobenthos and, ultimately the stock of commercial fishes. The main causes of eutrophication of the lake are changes in its morphometry, inflow of nutrient rich and polluted water from the tributaries, and decreased consumption of nutrient salts by bottom vegetation due to its weak development.

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## Industrial Toxicology

USSR

UDC 612.017.1-06:614.72:[546.262-31+547.281.1

VINOGRADOV, G. I., and RUDNEV, M. I., candidates of medical sciences, Kiev Scientific Research Institute of General and Community Hygiene imeni A. N. Marzeyev

IMMUNOBIOLOGICAL REACTIVITY OF THE BODY TO THE ACTION OF CARBON MONOXIDE AND FORMALDEHYDE IN ATMOSPHERE

Moscow GIGIYENA I SANITARIYA (Hygiene and Sanitation) in Russian No 9, Sep 76 signed to press 24 Feb 76 pp 9-12

[Abstract] It has been established that formaldehyde and carbon monoxide in low concentrations cause elevated immunological protection of the organism by increasing the circulation of blood leucocytes, by intensified phagocytic activity of neutrophils, and elevation of the complement titer of the blood serum. This phenomenon should be viewed as an increased sensitivity of poisoned animals towards hypoxia and a lowering of the sensitivity of the body at a moment when more stringent requirements are placed upon it. No figures or tables; references 4 (Russian).

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USSR

UDC 614.6:54]-07:612.6.052+612.6.052.014:614.7](047)

FOMENKO, V. N., DOMSHLAK, M. G., and KATOSOVA, L. D., Institute of Industrial Hygiene and Occupational Diseases, Academy of Medical Sciences USSR, Moscow

MUTAGENIC ACTIVITY OF CHEMICAL AIR POLLUTANTS (LITERATURE SURVEY FOR THE PERIOD 1972-1974)

Moscow GIGIYENA I SANITARIYA (Hygiene and Sanitation) in Russian No 9, signed to press 5 Aug 76 pp 79-83

[Abstract] Analysis of literature shows that the greatest attention in the study of mutagenic activity of chemicals is paid to methodology and development of satisfactory test systems. Mutagenic activity should be studied by the methods of cytogenetic analysis of somatic cells of human and animal tissue, dominant lethal mutations, and by the method of intermediate host. Many papers are devoted to the question of the relationship between mutagenic effect and dose and exposure duration as well as to the establishment of threshold values. The weak link concerns structure-activity relationship studies, which are the real basic elements for any prognostication of mutagenic changes. No tables or figures; references 42: 22 Russian, 20 Western.

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USSR

UDC 613.6:631.234

TKACH, A. I., and PETROVA, M. I., Sanepidstation of Moscow Rayon, Leningrad

SANITATION HYGIENIC EVALUATION OF THE WORKING CONDITIONS IN NOVEL HOTHOUSES

Moscow GIGIYENA I SANITARIYA (Hygiene and Sanitation) in Russian No 9, Sep 76  
signed to press 6 Oct 75 pp 100-101

[Abstract] There are many operations in hothouses creating undesirable working conditions: heat, lack of proper footwear, contamination with pesticides, etc. In spite of that, most of the newer ones get a passing grade from the hygienic aspect. Technological improvements have lowered sick leave and absenteeism time. The areas still needing improvement are providing workers with practical footwear, lowering the use of toxic chemicals, and introducing break periods under normal climatic conditions. No figures or tables; references 2 (Russian).

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USSR

UDC 613.49:661.185

SAUTIN, A. I., doctor of medical sciences, STAROSTINA, A. I., RUDNEVA, T. K., LESTROVOY, A. P., candidate of medical sciences, SOLOV'YEVA, T. T., TEPLYAKOV, V. G., and SAVCHENKO, V. I., candidate of technical sciences Institute of General and Community Hygiene imeni A. N. Sysin, Academy of Medical Sciences USSR, Moscow and Moscow Institute of the Agricultural Production Engineers imeni V. P. Goryachkin

HYGIENIC ASSESSMENT OF THE EFFECT ON THE BODY OF SYNTHETIC SURFACE-ACTIVE SUBSTANCES AND DETERGENTS UTILIZING THEM (MC TYPE)

Moscow GIGIYENA I SANITARIYA (Hygiene and Sanitation) in Russian No 9, Sep 76  
pp 18-20 manuscript received 1 Jul 75

[Abstract] The authors studied the effect of solutions of synthanol DS-10, synthamide-5 and synthetic detergents (SD) MC-6 and MC-8 that are used for cleaning metal surfaces from resinous and greasy dirt, on the body of rats in case of percutaneous application. The time length of action was from 40 to 180 days with a daily exposition for 1 hr at a temperature of 37°. The surface active substances (SAS) (0.4% sol) and SD (3% sol) have a weak biologic action

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USSR

SAUTIN, A. I., et al., GIGIYENA I SANITARIYA No 9, Sep 76 pp 18-20

on the body of animals. SAS at high concentrations cause a number of disturbances in the body (carbohydrate, lipid and protein metabolism; hypofunction of the thyroid gland, etc.) that testify to their toxicity. The prolonged application of SD requires use of protective creams and gloves. Table 1; reference 1 (Russian).

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EAST GERMANY/ WEST GERMANY

REISS, J., Dr, Microbiological Laboratory, Grahamhaus Studt Limited, Bad Kreuznach, West Germany

BIOCHEMICAL EFFECTS IN BACILLUS SUBTILIS AFTER TREATMENT WITH THE MYCOTOXIN PATULIN

East Berlin ZEITSCHRIFT FUER ALLGEMEINE MIKROBIOLOGIE in German Vol 16 No 3, 76 pp 229-231 manuscript received 18 Sep 75

[Abstract; English article] This report describes the effects of patulin on the metabolism of *Bacillus subtilis*. The enzyme cytochrome oxidase, the utilization of citrate, and the fermentation of mannitol are inhibited in cells under the influence of 100 µg patulin per disk. Lower concentrations had no effect, apparently. The biochemical processes leading to these inhibitions of metabolic steps are not yet clear. Under the influence of 100 µg patulin per disk the cells were typically elongated. Patulin has the same nonspecific morphogenetic effect on *B. subtilis* as other mycotoxins on other bacteria. Figure 1; table 1; references 13: 2 German, 1 Japanese, and 10 Western.

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USSR

RYVKINA, I. S., VERKHORUBOV, B. A., FRIDMAN, A. N., NAUMOV, E. I., BAUM, R. F.

A METHOD OF AUTOMATIC CONTROL OF THE PROCESS OF CONTINUOUS CULTIVATION OF MICROORGANISMS

USSR AUTHOR'S CERTIFICATE NO. 469740, FILED 10/07/73, PUBLISHED 8/08/75  
in Russian

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 6 (I) 1976 Abstract No. 6L387P  
by Z. Avakyan]

[Text] The method suggested consists in regulation of the feed rate of paraffin and nutrient medium as a function of the ratio of their consumption. The method is distinguished by the fact that to stabilize the content of residual carbohydrates in the biomass and decrease fluctuations in productivity of the enzyme, simultaneously with regulation of the paraffin feed, the water feed is regulated; the regulation in both cases is performed as a function of biomass. As the biomass increases, the feed of water increases and the feed of paraffin decreases and vice versa.

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USSR

SAMTSEVICH, S. A., SHKLYAR, B. KH. SHUKAN, L. A.

A NUTRIENT MEDIUM FOR GROWING LYTIC ENZYMES

USSR AUTHOR'S CERTIFICATE NO. 439512, FILED 1/11/72, PUBLISHED 17/06/75  
in Russian

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 6 (I) 1976 Abstract No. 6L384P  
by A. R.]

[Text] A nutrient medium for growing lytic enzyme producers, for example *Actinomyces cinerosus*, is distinguished by the fact that to increase the activity of the enzymes produced, soy flour, baker's yeast and ammonium chloride are added to it, the components of the medium are contained in the following relationships, wt.%: soy flour -- 1, baker's yeast -- 0.25, disubstituted potassium phosphate -- 0.25, ammonium chloride -- 0.06, magnesium sulfate -- 0.01, yeast autolysate -- 0.01, water -- remainder.

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USSR

PROZOROV, A. A., ZHDANOVA, N. I., ZAYTSEVA, Z. M., VELIKZHANINA, G. A.,  
SEMENOVA, L. E.

THE STRAIN BACILLUS SUBTILIS GEN-37, PRODUCING L-TRYPTOPHAN

USSR AUTHOR'S CERTIFICATE NO. 324860, FILED 9/07/70, PUBLISHED 26/09/75  
in Russian

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 6 (I) 1976 Abstract No. 6L367P  
by Z. Avakyan]

[Text] An active L-tryptophan producer, a strain of *Bac. subtilis* Gen-37 is suggested which, in contrast to known strains, does not require growth factors and assures a higher yield of L-tryptophan (4.1 g/l) with shorter biosynthesis time (48 hr) and more effective utilization of carbohydrates.

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USSR

PANFILOVA, Z. I.

A STRAIN OF BACTERIUM PRODIGIOSUM (*SERRATIA MARCESCENS*) V-10 M-1 --  
NONSPECIFIC ENDONUCLEASE PRODUCER

USSR AUTHOR'S CERTIFICATE NO. 431214, FILED 22/05/72, PUBLISHED 20/06/75  
in Russian

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 6 (I) 1976 Abstract No. 6L354P  
by A. R.]

[Text] A strain of *B. prodigiosum* (*S. marcescens*) V-10 M-1 is patented -- a producer of nonspecific endonuclease (E), an auxotroph requiring addition to the nutrient medium of serine and lysine. When grown on a peptone medium, the strain forms up to 3600 units E/ml culture medium. The activity of the corresponding phosphomonoesterase is reduced in this case. The characteristics of the producer strain are presented.

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USSR

FEDOTKIN, I. M., MATVEYENKO, P. S., SEMENETS, P. A., ROMANYUKOV, N. B.,  
GNEDYUK, B. S.

APPARATUS FOR CULTIVATION OF MICROORGANISMS

USSR AUTHOR'S CERTIFICATE NO. 424877, FILED 17/02/72, PUBLISHED 20/02/75  
in Russian

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 6 (I) 1976 Abstract No. 6L347P  
by A. R.]

[Text] The apparatus suggested allows intensification of the process of growth of microorganisms. For this purpose, at the lower end of the central pipe is a fitting with a flange, beneath which is a disc forming a circular gap; the disc is installed so that it can be moved in the vertical plane, while the pipe which feeds the nutrient medium is connected to the fitting through a circular collector with radial fittings. The diffuser in the upper and lower portions can be equipped with a bell, and a plate may be located beneath the lower bell to form a mixing chamber. The delivery pipe of the circulation system can be connected to the center of the pipe through

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USSR

FEDOTKIN, I. M., MATVEYENKO, P. S., SEMENETS, P. A., ROMANYUKOV, N. B.,  
GNEDYUK, B. S., USSR AUTHOR'S CERTIFICATE NO. 424877, FILED 17/02/72,  
PUBLISHED 20/02/75

ejectors. The apparatus suggested is schematically diagramed.

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USSR

TOKAREV, B. I., LOSKUTOV, G. M.

METHOD OF AUTOMATIC CONTROL OF THE PROCESS OF GROWING OF MICROORGANISMS

USSR AUTHOR'S CERTIFICATE NO. 424875, FILED 30/06/72, PUBLISHED 20/02/75  
in Russian

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 6 (I) 1976 Abstract No. 6L346P  
by A. R.]

[Text] The method suggested, consisting in regulation of the feed of the components, for example nutrient medium, as a function of heat liberation, is distinguished by the fact that to intensify the process of growth, heat liberation is judged from the distribution of the temperature field in the culture fluid. The invention is explained by a drawing.

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USSR

ZARAK, V. A., AGAPOVA, YE. V., BELYAKOVA, M. S., NIKOL'SKAYA, L. A.,  
POTAK, YE. M., KHUDOSHEVA, Z. A., BARABLINA, N. V., OBUSHENKOV, G. I.,  
KOGAN, M. I., SAVOST'YANOV, G. I., ANSHAKOV, A. F., BEYGEL'MAN, N. A.,  
BOGATYREVA, E. D., SHCHEKOKHIKHIN, G. F., KHRIPACHEV, I. YE.

AN INSTALLATION FOR CONTINUOUS FERMENTATION

USSR AUTHOR'S CERTIFICATE NO. 461942, FILED 29/01/69, PUBLISHED 12/08/75  
in Russian

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 6 (I) 1976 Abstract No. 6L345P  
by A. R.]

[Text] In order to increase the intensity of the process of fermentation and the productivity of the installation, the cooler unit is connected by pipes to the upper portion of the inoculator and the lower portion of the fermentor, the inoculator is connected to the lower portion of the fermentor, the fermentor is equipped with a recirculation loop providing for circulation of the culture medium from the upper sections of the fermentor to the lower plate. The installation is equipped with a maturing tank, the lower portion

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USSR

ZARAK, V. A., AGAPOVA, YE. V., BELYAKOVA, M. S., NIKOL'SKAYA, L. A.,  
POTAK, YE. M., KHUDOSHEVA, Z. A., BARABLINA, N. V., OBUSHENKOV, G. I.,  
KOGAN, M. I., SAVOST'YANOV, G. I., ANSHAKOV, A. F., BEYGEL'MAN, N. A.,  
BOGATYREVA, E. D., SHCHERKOCHIKHIN, G. F., KHRIPACHEV, I. YE., USSR AUTHOR'S  
CERTIFICATE NO. 461942, FILED 29/01/69, PUBLISHED 12/08/75

of which contains aerating devices connected by pipes to the upper portion of the fermentor at the level of the culture medium at the upper plate and above the level of this medium. The inoculator is equipped with a sprayer located in its upper portion for spraying of the nutrient medium and an aerator located in its lower portion. The hydraulic traps consist of a pipe located in a cup placed beneath the plates. A diagram of the installation is presented.

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USSR

SEMENOV, YA. V., REDIKUL'TSEV, YU. V., SHMELEV-SHAMPANOV, O. A.

AN APPARATUS FOR GROWING OF MICROORGANISMS

USSR AUTHOR'S CERTIFICATE NO. 462863, FILED 21/12/72, PUBLISHED 19/05/75  
in Russian

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 6 (I) 1976 Abstract No. 6L344P  
by A. R.]

[Text] The apparatus suggested is distinguished by the fact that to intensify the process of growth of microorganisms, the container is made in the form of a torus, and the ejectors are installed within the circle of the torus and their mixing chambers are connected to the container so that the angles between the projection of the longitudinal axis of the ejector on the plane of the large section of the torus and the longitudinal axis of the ejector, as well as the vertical axis of the container, is less than 90°.

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USSR

ANISIMOV, O. L., GAVRILOV, YU. B., DALMATOV, V. D., MISKILEV, V. F.,  
ROMAZANOV, V. S.

PHOTOAUTOTROPHIC CULTIVATOR FOR GROWING OF MICROORGANISMS

USSR AUTHOR'S CERTIFICATE NO. 471095, FILED 24/01/74, PUBLISHED 28/08/75  
in Russian

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 6 (I) 1976 Abstract No. 6L343P  
by A. R.]

[Text] The cultivator suggested is distinguished by the fact that to increase the productivity, the drainage surface is made corrugated. In order to regulate the thickness of the stream of suspension on the drainage surface, it is separated from the transverse groove by a moving flap. The invention is an installation designed for cultivation of photoautotrophic microorganisms such as chlorella, spirulins, and can be used for cattle feed bases, poultry farms, etc., and also as a component section for large batteries of industrial cultivators.

1/1

USSR

GANDZYUK, M. P., SOKOLENKO, A. I., STEPANETS, I. F.

APPARATUS FOR GROWING OF MICROORGANISMS

USSR AUTHOR'S CERTIFICATE NO. 455145, FILED 12/02/73, PUBLISHED 23/05/75  
in Russian

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 6 (I) 1976 Abstract No. 6L342P  
by A. R.]

[Text] In order to intensify the process of growth of microorganisms in the apparatus proposed, the lower ends of the circulation pipes are located within the container and equipped with mechanical oscillation generators made in the form of hydraulic rams.

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USSR

UDC 576.895.771

DZERZHINSKIY, V. A., DUBITSKIY, A. M., and DESHEVIKH, N. D., Institute of Zoology, Academy of Sciences Kazakh SSR, Alma-Ata

FEASIBILITY OF USING IRIDOVIRUS FOR CONTROL OF MOSQUITOES

Leningrad PARAZITOLOGIYA in Russian Vol 10, No 5, Sep/Oct 76 pp 458-459

[Abstract] Laboratory and pilot-field experiments on infection of *Aedes caspius* larvae by means of iridovirus were carried out in Taldy-Kurgan Oblast' of Kazakhstan; 54% of the larvae were killed under laboratory conditions, and 52% in pilot-field trials. The infection became apparent at the 5-6 day, with most deaths occurring during the 6-9th days of the experiment. Tables 2; reference 1 (Russian).

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USSR

UDC 582.282.23:576.858

NESTEROVA, G. F., All-Union Institute of Genetics of Industrial Microorganisms, Moscow

VIRUSLIKE FACTORS IN YEASTS

Moscow USPEKHI SOVREMENNOY BIOLOGII in Russian No 1(4), 1976 pp 117-131

[Abstract] Certain particles seen on microphotographs of yeast cells are called viruslike because they have a double membrane and electron-dense contents. The author describes the structure, properties, reproduction, and inheritance by the yeasts *Candida tropicalis* and *Saccharomyces cerevisiae* of such infectious viruslike particles and "killer" cytoplasmatic determinants, i.e., the factors that enable certain yeast strains to kill cells of other strains of the same species. She discusses the mode of spread of these factors in yeast cultures in relation to the main characteristics of their interaction with the cell--absence of lysis, low cytoplasmatic activity, and low level of reproduction and action on inherited properties of the host cells. Figures 4; table 1; references 58: 15 Russian, 43 Western.

1/1



USSR

UDC 582.28.576.8.095.3:547.466

MAKAROVA, YE. N., MELKONYAN, A. B., and MARGARYAN, Institute of Microbiology,  
Academy of Sciences, Armenian SSR

EFFECT OF SOURCES OF NITROGEN AND CARBON ON THE CONTENT OF SOME ESSENTIAL  
AMINO ACIDS IN THE BIOMASS OF YEASTS AND BACTERIA

Yerevan BIOLOGICHESKIY ZHURNAL ARMENII in Russian No 7, 1976 signed to press  
11 May 76 p 91

[Abstract] The effects of carbon (glucose and n-alkanes) and nitrogen (glutamic acid) sources on the content of lysine, threonine, valine, methionine, leucine-  
isoleucine, tryptophan, etc., were studied in some *Candida* and *Saccharomyces*  
yeasts and the bacteria *C. glutamicum* and *Brevibacterium*. All the cultures  
contained the various amino acids under study. In the bacterial cultures,  
lysine and tryptophan changed the most. For example, the lysine content increased  
by 45.8 and 21.4% in *C. glutamicum* and *Brevibacterium*, respectively, after  
assimilating glutamic acid, whereas the tryptophan concentration decreased by  
25 and 43% due to this nitrogen source. In *S. carlsbergensis* and *C. utilis*,

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USSR

MAKAROVA, YE. N., MELKONYAN, A. B., and MARGARYAN, BIOLOGICHESKIY ZHURNAL  
ARMENII No 7, 1976 p 91

the level of accumulation of amino acids, with proline as a nitrogen source,  
was lower than with other amino acids. In *C. tropicalis* 959, the quantity of  
essential amino acids varied with the medium (glucose or n-alkane) on which  
it was grown.

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USSR

UDC 614.718-078

NEMYRYA, V. I., candidate of medical sciences and BAUBINAS, A. K., Institute of General and Communal Hygiene imeni A. N. Sysin, Academy of Medical Sciences USSR, Moscow Scientific Research Institute of Epidemiology, Microbiology and Hygiene Ministry of Health of the Lithuanian SSR, Vil'nyus

USE OF THE IMPRINT METHOD IN STUDYING THE EXTENT OF SPREAD OF VIABLE MICROORGANISMS

Moscow GIGIYENA I SANITARIYA (Hygiene and Sanitation) in Russian No 9, Sep 76  
signed to press 6 Nov 75 pp 73-74

[Abstract] Microorganisms found in the atmosphere settle down on the surface of leaves and grass, and remain viable for a length of time. To determine their spread from a source, one should use determinations of the atmospheric air by the standard methods in combination with imprint method of the leaves and grass. The imprint method and the wash-off method can also be applied in areas where it is not possible to use aspirators, air pumps, Kratov apparatus and such. No tables, figures; reference 1 (Western).

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USSR

UDC 613.63-085.2

KARIMOV, V. A., Uzbek Institute of Sanitation, Hygiene, and Occupational Diseases

EFFECT OF A HEXACHLOROCYCLOHEXANE AND ROGOR MIXTURE ON LIPID METABOLISM

Tashkent MEDITSINSKIY ZHURNAL UZBEKISTANA in Russian No 8, 1976 signed to press 19 Dec 75 pp 61-62

[Abstract] Rabbits chronically poisoned by ingestion of a mixture of the insecticides hexachlorocyclohexane and rogor (phosphamide) in cottonseed oil showed the following changes in lipid metabolism after 3 months: a threefold increase in total blood lipids above the baseline values, 1.7-fold increase in  $\beta$ -lipoproteins, 1.3-fold increase in lecithin and 1.6-fold decrease in total cholesterol and decrease in the cholesterol:lecithin ratio from 1.0 to 0.42. Normal cholesterol and lecithin values were quickly restored by treating the animals with vitamin B<sub>12</sub>, galascorbin (vitamin C, tannin, potassium), and methionine.

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## Physiology

USSR

BASHKIROV, A. A., KICHIGIN, A. V., KOROBKOV, A. V., SHCHEL'TSIN, L. K.

INFLUENCE OF LOCAL NEGATIVE PRESSURE CREATED OVER THE SURFACE OF THE EXPOSED BRAIN ON SPONTANEOUS SPINDLE ACTIVITY OF THE CEREBRAL CORTEX WITH SURFACE NEMBUTAL NARCOSIS

MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA" in Russian Moscow, 1976 pp 37-39

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 8 (III) 1976 Abstract No. 8R520 by L. G. Orlova]

[Text] A study is made of the influence of local negative pressure (LNP) of 5, 10, 15, 100 and 200 mm water for 5, 10, 15 s, 1 min, 3 min on the bioelectric activity of the cat brain with mild nembutal narcosis (20-30 mg/kg weight) both on the side of application of LNP and in the "intact" hemisphere. With 5-15 mm water, the frequency of spindles is almost no different from the initial value. With greater decreases in pressure, changes in the cerebral tissue of hypoxic type develop. A difference in the reaction of the zones of the cortex of the large hemispheres to LNP is noted which, apparently, involves varying resistance of these zones to the effects of LNP.

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USSR

NEVSKIY, YU. B., YEGOROV, M. S.

A PRESSURE CHAMBER FOR THE STUDY OF THE INFLUENCE OF SUDDEN DECOMPRESSION ON THE ORGANISM OF ANIMALS AND MAN

USSR AUTHOR'S CERTIFICATE NO. 467017, FILED 9/11/72, PUBLISHED 22/10/75 in Russian

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 8 (III), 1976 Abstract No. 8R498P by A. V. Sterlikov]

[Text] A description is presented of the design of a pressure chamber for investigation of the influence of sudden decompression on the organism of animals and man, consisting of a sealed cabin and hatch (H) with a cover hinged to a rotation axis and equipped with a self-sealing liner. This chamber differs from others in that in order to accelerate opening of the H and soften the impact of the H against the structure surrounding the cabin, the hinge of the H is equipped with a torsion bar, with one end mounted in the H cover, the other end in the body of the cabin.

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USSR

KOROBKOV, A. V.

MATERIALS OF THE SCIENTIFIC CONFERENCE "PHYSIOLOGICAL AND CLINICAL EFFECTS OF LOCAL NEGATIVE PRESSURE"

MATERIALY NAUCHNOY KONFERENTSII "FIZIOLOGICHESKIY I KLINICHESKIYE EFFEKTY LOKAL'NOGO OTRITSATEL'NOGO DAVLENIYA" in Russian Moscow, 1976 167 pp

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 8 (III), 1976 Abstract No. 8R496K from the resume]

[Text] The materials of the conference included the following scientific problems: 1) physiological problems of the use of local negative pressure to conserve and increase the working capacity of a healthy person under various external and internal environmental conditions; 2) theoretical and practical problems of the use of local negative pressure in clinical practice to treat various diseases and for rehabilitation.

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USSR

RABINOVICH, E. Z.

PECULIARITIES OF THERMAL REGULATION WITH LOCAL DECOMPRESSION

MATERIALY NAUCH KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA" in Russian Moscow, 1976 pp 44-46

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 8 (III) 1976 Abstract No. 8R528 by L. G. Orlova]

[Text] The temperature of the external auditory passage was measured in order to estimate the temperature dynamics of the hypothalamus under the influence of local negative pressure (LNP). An increase was noted in the temperature of the auditory canal by 0.1-0.2 C even at the beginning of one minute application of LNP, with a simultaneous decrease in skin temperature of the fingers. This reaction occurs due to the vasoconstrictor effect of the vasculomotor center due to reflexes of the baroreceptors of the vessels in the area of LNP. With time (after 10 minutes) the temperature may equalize due to the thermoregulation response of the hypothalamus, both directly from it and by hypothalamus influences on the vasculomotor center. Thus, the specifics of

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USSR

RABINOVICH, E. Z., MATERIALY NAUCH KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA" 1976 pp 44-46

thermal regulation under the influence of LNP are manifested with the interaction of vascular reflexes of the vasomotor center and the hypothalamus.

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USSR

UDC 612+616"5"

GUBIN, G. D. and CHESNOKOV, A. A., Tyumen' Medical Institute

BIOLOGICAL RHYTHMS AS A DIAGNOSTIC TEST OF HEALTH AND PATHOLOGY

Moscow LABORATORNOYE DELO in Russian No 7, 1976 signed to press 18 Mar 75  
pp 432-434

[Abstract] A study of specimens of tissue from the tonsils of healthy children (100) and those with chronic tonsillitis (124) showed that while phagocytosis exhibited a circadian rhythm, peaking at 1200 hours in both groups, there were significant differences in several respects. In the children with chronic tonsillitis, the mean daily rate of phagocytosis and the phagocytic index were 50 and 41% lower, respectively, than in the healthy children. The curve reflecting the rhythmicity of these parameters in the sick children was quite flat: the diurnal amplitude of the phagocytic rate and phagocytic index decreased by a factor of about 4 and 2.8, respectively, below normal. Tables 2; references 3 (Russian).

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USSR

[No UDC]

IVANOV, K. P., KONSTANTINOV, V. A., MALOVICHKO, N. A., and DANILOVA, N. K.,  
Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR,  
Leningrad

QUANTITATIVE ROLE OF IMPULSES FROM THE SKIN THERMORECEPTORS IN THE MECHANISM  
OF THERMOREGULATION ACCORDING TO DATA ON NONANESTHETIZED ANIMALS

Moscow DOKLADY AKADEMII NAUK SSSR in Russian No 6, 1976 signed to press 21 Apr  
76 pp 1488-1491

[Abstract] In experiments on alert rabbits with implanted electrodes, changes  
in the temperature of the skin on the dorsum nasi coincided with regular  
changes in the frequency of impulses from the infra-orbital nerve. In most  
of the animals, an elevation of the temperature of the dorsum nasi reduced the  
frequency of impulses, whereas a lowering of the temperature invariably in-  
creased the frequency of impulses, showing that thermoreceptors of the cold  
type are predominant in the nose. The close correlation between the vascular  
reaction to temperature and changes in impulses from the nasal thermoreceptors

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USSR

IVANOV, K. P., KONSTANTINOV, V. A., MALOVICHKO, N. A., and DANILOVA, N. K.,  
DOKLADY AKADEMII NAUK SSSR No 6, 1976 pp 1488-1491

suggests that under normal physiological conditions changes in the latter  
play a leading role in the mechanism of thermoregulation. Figures 2; refer-  
ences 8: 3 Russian, 5 Western.

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USSR

UDC 613.644

ALEKSEYEV, S. V., KRUGLOV, A. S., GARANIN, L. D., KADYSKIN, A. V. (deceased), and KADYSKINA, YE. N., Sanitation-Hygienic Medical Institute, and Institute of Aviation Equipment Construction, Leningrad

SOME PROBLEMS OF THE DETERMINATION OF NOISE AND INVESTIGATION OF ITS EFFECT ON THE BODY

Moscow GIGIYENA I SANITARIYA (Hygiene and Sanitation) in Russian No 9, Sep 76 signed to press 29 Jul 75 pp 104-106

[Abstract] The cumulative effect of noise on the body--the so-called equivalent level of intensity--is an important characteristic of noise along with frequency spectrum and intensity level. To be able to determine instantaneous and equivalent values of noise level, a noise dosimeter has been developed consisting of a microphone, an amplifier, detector, indicator, integrator and timer. Using this instrument it was established that noise at a constant level of 100 dB increased the threshold of sound sensitivity. Figure 1; reference 1 (Russian).

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USSR

UDC 612.8:612.858.74:612.67

LOPOTKO, A. I. and SAGAL, A. A., Leningrad Sanitary-Hygiene Medical Institute

THE EVOLUTION OF THE RECEPTIVE CAPABILITY OF THE HUMAN HEARING ANALYZER DURING AGING

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 230, No 1, Sep/Oct 76 signed to press 26 Mar 76 pp 234-236

[Abstract] The investigation sought to measure the individual process of receptive hearing loss at various periods in the cycle of development of the analyzer. Absolute and differential hearing thresholds were determined for persons in age groups 16-19, 20-29, 30-39, 40-49, 50-59, 60-69, 70-79, and 80 years and older. Tests were conducted at approximate audiometric frequencies of 16, 32, 64, 125, 250, 500, 1000, 2000, 4000, 8000, and 10,000 Hz. Results indicated two general changes in the receptive capability of the hearing system. With increasing age the lower border of auditory discrimination rose and the upper limit decreased, i. e., the band of frequencies that could be heard

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USSR

LOPOTKO, A. I. and SAGAL, A. A., DOKLADY AKADEMII NAUK SSSR No 1, Sep/Oct 76  
pp 234-236

narrowed. Furthermore, the discrimination of sounds within the band of audible frequencies also deteriorated. These changes occurred in a linear manner. Figures 3; references 9: 4 Russian, 5 Western.

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USSR

UDC 591.88:591.481.1

KOSITSYN, N. S., and KOLOSOV, N. G., corresponding member, Academy of Sciences of the USSR, The Institute of Higher Nervous Activity and Neurophysiology of the Academy of Sciences of the USSR, Moscow

ULTRASTRUCTURAL ASPECTS OF NONSYNAPTIC INTERACTION BETWEEN NEURONS (INTERNEURON TRANSFER)

Moscow DOKLADY AKADEMII NAUK SSSR in Russian No 230 No 1, Sep/Oct 76 signed to press 18 May 76 pp 213-215

[Abstract] The investigation used the sensory motor cortex of cats and kittens from birth to 2 weeks in age, and the hippocampal cortex of mature rabbits. Pieces of brain were prepared and examined in the usual procedure for electron microscopes. Pinocytic vesicles were found covering the surface of the synaptic covering, similar to those found inside the cytoplasm of dendrites and axons. In the developing nervous system of the young animals the most common locations for pinocytic vesicles are active zones of synaptic contact, and it

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USSR

KOSITSYN, N. S., and KOLOSOV, N. G., DOKLADY AKADEMII NAUK SSSR No 230 No 1,  
Sep/Oct 76 pp 213-215

seems likely that mutual extrusion takes place via large vesicles in absorbing intercellular material. Such manifestations are much rarer in adult subjects. Limitation of interneuron exchange to areas of active synapsis seems to be explained by increased metabolism in the areas where there is an ultrastructural basis for such a manifestation. These observations should probably be weighed in considering pathological processes in the nervous system, particularly circulation of viruses. Figures 2; references 13: 4 Russian, 9 Western.

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## Public Health

USSR

GORDIN, R. L.

### PROBLEMS OF THE PHYSICAL DEVELOPMENT OF THE POPULATION UNDER CONDITIONS OF CONTEMPORARY URBANIZATION

UCH. ZAP. NII KOMPLEKS. SOTS. ISSLED. LENINGR. UN-TA in Russian 1976, No. 15 pp 127-132

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No. 8, 1976 Abstract No. 8.36.33 by YE. Raykh]

[Text] Planning and prediction of the social development of territorial groups of people, in addition to other purposes, has the task of maximum reduction and elimination of the unfavorable influence of elements of the urban environment on the health of the population and its competence. The data of contemporary scientific investigations convincingly indicate the influence of the environment on the formation of programs of ontogenesis. This is particularly manifested in the accelerated physical development of people in a number of countries in the past decade, the changing duration of life and many factors relating to the structure of morbidity. Specialization

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USSR

GORDIN, R. L., UCH. ZAP. NII KOMPLEKS. SOTS. ISSLED. LENINGR. UN-TA 1976 No. 15 pp 127-132

in almost all areas of human activity has changed the relationship of human labor expenditure in the process of labor in favor of increasing nervous and mental activity. "Mechanization" of home life leads to the fact that the energy expenditures during the course of the day for some persons are only slightly greater than the energy expenditures of basal metabolism. This leads to physical complications, manifested in the extensive incidence of cardiovascular and nervous-mental diseases. The pollution of the biosphere in cities, the high alcohol and tobacco consumption of the urban population also have negative effects on human health. However, if a certain level of physical development is not maintained at work, it is quite natural to state that it must be maintained in other forms of motor activity. The specific nature of these problems forces us to turn first of all to analysis of the role of physical culture.

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USSR

GIMADEYEV, M. M. [Reviewer], docent, Kazan

THE SANITARY-EPIDEMIOLOGICAL STATION TODAY

Kazan' KAZANSKIY MEDITSINSKIY ZHURNAL in Russian No 3, 1976 pp 283-284

[Review of book "Sanepidstantsiya na sovremennom etape" by G. P. Zarubin, Moscow, 1975]

[Abstract] The monograph reflects the author's many years experience in directing sanitary-epidemiological stations, Soviet health units charged with monitoring sanitary conditions in industrial plants, schools, and restaurants and in implementing measures at the local level to control epidemic diseases. The 5 chapters describe the organization of sanitary-epidemiological stations and suggest methods of increasing their efficiency note shortcomings in various phases of the work, describe physicochemical and bacteriological methods of investigation, discuss problems involved in controlling intestinal diseases, diphtheria, measles, and whooping cough, tell how to disinfect soil, buildings, vehicles, etc. and prevent hospital staphylococcal infection, and offer

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USSR

GIMADEYEV, M. M., KAZANSKIY MEDITSINSKIY ZHURNAL No 3, 1976 pp 283-284

suggestions for improving the research and practical work of physicians serving in sanitary-epidemiological stations.

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EAST GERMANY/YUGOSLAVIA

BARBIC, F. F., Dr, BRACILOVIC, D. M., KRAJINCANIC, B. V., and LUCIC, J. L.,  
Institute for Technology of Nuclear Raw Materials and Boris Kidric Institute  
of Nuclear Sciences, Belgrade, Yugoslavia

BACTERIAL LEACHING OF WASTE URANIUM MATERIALS

East Berlin ZEITSCHRIFT FUER ALLGEMEINE MIKROBIOLOGIE in German Vol 16 No 3,  
76 pp 179-186 manuscript received 7 Jun 75

[Abstract] The effect of ferrobacteria and thiobacteria on the leaching of waste uranium materials from which 70-80 percent of uranium has been previously leached by classical chemical hydrometallurgical procedures was investigated. The bacteria used are found in the ore and the mine water of Zletovska River area in Yugoslavia. Parameters of biological leaching were examined in the laboratory. Leaching conditions were varied with the aim of increasing the amount of uranium leached. The effect of pyrite added to the waste materials before the beginning of leaching has also been examined. Uranium leaching is directly proportional to the composition and number of ferrobacteria and thiobacteria, and

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EAST GERMANY/YUGOSLAVIA

BARBIC et al, ZEITSCHRIFT FUER ALLGEMEINE MIKROBIOLOGIE Vol 16 No 3, 76 pp 1790  
186 manuscript received 7 Jun 75

almost doubled the value obtained from the same starting materials without using bacteria. Increased sulfuric acid concentrations considerably stimulate the rate of leaching. Uranium leaching is increased by up to 20 percent, while sulfuric acid consumption decreased simultaneously by the addition of pyrite. Uranium concentrations in starting waste materials used for leaching were extremely low (0.0278 and 0.0372 percent uranium) but about 60 percent recovery of uranium was achieved with relatively low sulfuric acid consumption. Figures 2; tables 4; references 20: 4 Russian, 4 Yugoslav, 1 German, and 11 Western.

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USSR

UDC 597.12

BAKUNOV, N. A., and GARANINA, S. N., Dagestan Branch, the Caspian Scientific Research Institute for Fishing of the Fishing Combine "Dagryba"

ACCUMULATION OF STRONTIUM<sup>90</sup> and CESIUM<sup>137</sup> IN SALT WATER AND FRESH WATER FISHES OF THE CASPIAN BASIN

Sverdlovsk EKOLOGIYA in Russian No 4, Jul/Aug 76 signed to press 12 Mar 74  
pp 78-81

[Abstract] Fresh water specimens were caught in the deltas of the Volga and Ural rivers, while salt water and migratory species were caught in various areas of the Caspian Sea. The weight of each sampling was 3-4 kg, and the samples for measuring radioactive materials were prepared initially by standard procedures. Cesium<sup>137</sup> content was determined by the antimony-iodine method of Bakunov, while strontium<sup>90</sup> was determined on the basis of its decay product ittrium<sup>90</sup> by extraction in tributylphosphate. Results indicated greater accumulation of strontium<sup>90</sup> in benthophags than in ichthyophags. Cesium<sup>137</sup> accumulation was the opposite, with higher amounts found in ichthyophags. Comparison of data indicates that polluted conditions in the Volga

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USSR

BAKUNOV, N. A., and GARANINA, S. N., EKOLOGIYA No 4, Jul/Aug 76 pp 78-81

delta account for accumulations of strontium<sup>90</sup> in fresh water fish and cesium<sup>137</sup> in salt water species. Further measurements showed that radioactivity in fishes was actually caused more by natural potassium<sup>40</sup> than by the pollution-induced radionuclides. Tables 2; references 12: 10 Russian, 2 English.

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USSR/CSSR

UDC 612.751.1:546.42.02.90(437.6)

CHEKHVALA, L., TSARAKH, Y., and VIKTORY, D., Oblast' Sanepidstation, Bratislava, Czechoslovakia

Sr<sup>90</sup> CONTENT IN BONE TISSUE OF SLOVAK POPULATION

Moscow GIGIYENA I SANITARIYA (Hygiene and Sanitation) in Russian No 9, Sep 76  
signed to press 23 Sep 75 pp 88-91

[Abstract] The Sr<sup>90</sup> content in the milk teeth of children reached maximal levels in both the northern and southern regions of Slovakia in 1963. Among adult population some irregularities were shown in the Sr<sup>90</sup> content of the bones, the Sr<sup>90</sup> level increasing with age. No differences were found in the Sr<sup>90</sup> content in different bones of the children and teenagers, the maximum level being identified in the age bracket of 2 months to 4 year old ones. Normalization coefficients have been established from which it was possible to calculate the skeleton content of Sr<sup>90</sup> on the basis of its level in some bones and in teeth. Tables 2; references 4: 1 Russian, 3 Western.

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## Therapy

USSR

KOROBKOV, A. V.

### THE PROBLEM OF LOCAL NEGATIVE PRESSURE (LNP)

MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA" in Russian Moscow 1976 pp 5-12

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 8 (III) 1976 Abstract No. 8R527 by L. G. Orlova]

[Text] A theory is formulated on the mobilization and unity of central and local mechanisms of regulation under the influence of LNP. A list of problems is presented concerning LNP, studied at the Second All-Union Conference. The positive influence of LNP in the practice of medicine, physical therapy and sports is noted. The well-founded nature of the suggestions set forth and results of investigations, the practical significance of the use of LNP allow the theoretical and practical aspects of this problem to be studied extensively.

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USSR

KARIKOVA, A. A.

### EFFECT OF DECOMPRESSION ON VOLUME OF CIRCULATING BLOOD, ACID-ALKALINE EQUILIBRIUM AND CAPILLARY CIRCULATION

MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA" in Russian Moscow, 1976 pp 76-79

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 8 (III) 1976 Abstract No. 8R526 by L. G. Orlova]

[Text] A study is made of the influence of local decompression (LNP) on the circulating blood volume, acid-alkaline equilibrium, and capillary circulation in patients with obliterating atherosclerosis of the vessels of the lower extremities of stage II. The duration of application of LNP to each leg was 25 minutes. It was shown that LNP caused an increase in the volume of circulating blood in up to 12% of patients, apparently by increasing the volume of circulating erythrocytes and circulating plasma, as well as a change in the acid-alkaline equilibrium. It is noted that over one liter of pooled blood may be delivered to the circulatory bed. After decompression,

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USSR

KARIKOVA, A. A., MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA" 1976 pp 76-79

an increase in visibility of the capillary network was observed.

2/2

USSR

GOLYAKOV, V. N., ROMANOVA, V. A., SEMAVIN, I. YE.

INFLUENCE OF LOCAL NEGATIVE PRESSURE (LNP) ON CERTAIN INDICATORS OF LIPID METABOLISM, BLOOD COAGULATION AND ACID-ALKALINE EQUILIBRIUM

MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA" in Russian Moscow, 1976 pp 82-84

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 8 (III) 1976 Abstract No. 8R525 by L. G. Orlova]

[Text] 100 patients were studied who suffered from obliterating atherosclerosis of the vessels of the extremities, metabolic arthritis, deforming spondylosis with radicular syndrome. A V. A. Kravchenko pressure chamber was used to supply decompression equivalent to 300-400 m altitude to the upper extremities, 800-1200 m to the lower extremities, 2500-3000 m for the back. The patients were given O<sub>2</sub> through a mask at 1-2 l/min for 10-15 minutes. 25 to 30 procedures were used for the extremities, 15 procedures for the back. A positive effect of the treatment was noted in 88% of patients. No reliable changes in the level of cholesterol or beta-lipoproteins were observed under

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USSR

GOLYAKOV, V. N., ROMANOVA, V. A., SEMAVIN, I. YE., MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA" 1976 pp 82-84

the influence of LNP. In 61.5% of the patients, the blood pH increased. Furthermore, a shift in reinforcement of metabolism in the direction of neutral fats, decrease in coagulation and increase in activity of anti-coagulant system of the blood were observed.

2/2

USSR

ZHULEVA, M. YE., SHALDIN, V. I.

OXYGEN-HYPOBAROTHERAPY IN NEUROLOGIC PRACTICE

MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA" in Russian Moscow, 1976 pp 146-147

[From REFERATIVNYY ZHURNAL, BIOLOGIYA No. 8 (III) 1976 Abstract No. 8R519 by L. G. Orlova]

[Text] A study is made of the influence of oxygen-hypobarotherapy (OHBT) on the condition of 595 patients (61 with cervical osteochondrosis, 248 with lumbar osteochondrosis, 286 with mono- and polyneuritis) from 7 to 70 years of age. One extremity of the patient was placed in a pressure chamber saturated with O<sub>2</sub> with the pressure reduced by 40-50 mmHg below atmospheric for 20-30 minutes. The condition of the vascular system was recorded by means of oscillography, capillaroscopy, thermometry, polarography and rheovasography. On the average, each patient was given 25 OHBT treatments. After the course of OHBT, normalization of vascular tonus was observed in 53% of patients, improvement of blood supply in 60% of patients with neuritis, relief from

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USSR

ZHULEVA, M. YE., SHALDIN, V. I., MATERIALY NAUCH. KONF. "FIZIOL. I KLINICH. EFFEKTY LOKAL'N. OTRITSATEL'N. DAVLENIYA 1976 pp 146-147

capillary spasm in 64% of patients with osteochondrosis. The data produced indicate the favorable influence of OHBT on the blood supply to the tissues of the patients with neuritis and osteochondrosis, as well as a reduction in the time lost from work.

2/2

USSR

UDC 616.127-005.8

LEVIN, A. I., ZUBAREV, M. A., and VAYNBERG, A. G., Perm' Medical Institute

PROGNOSTIC VALUE OF THE COURSE OF PREINFARCTION PATHOLOGY

Kazan' KAZANSKIY MEDITSINSKIY ZHURNAL in Russian No 3, 1976 signed to press 25 Sep 75 pp 211-212

[Abstract] Preinfarction pathology was observed in 56 of 97 cardiac patients. The subacute variant of the course was dominant in those who had suffered repeated infarctions. Preinfarction symptoms were found in 75% of those with hypertension and in 42% of those with atherosclerosis of the coronary arteries. Eosinopenia was more common in patients with acute preinfarction pathology or without it than in those with a subacute preinfarction course. The latter group also suffered from hypercoagulation before the infarction occurred. Fibrinogen concentrations were higher in all groups of patients than in healthy controls. During the first few days after the infarction, strain on the left and right atria was more pronounced in the patients without precursors and in those with an acute preinfarction condition than in those

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USSR

LEVIN, A. I., ZUBAREV, M. A., and VAYNBERG, A. G., KAZANSKIY MEDITSINSKIY  
ZHURNAL No 3, 1976 pp 211-212

with a subacute preinfarction condition. Complications in the form of cardiogenic shock, arrhythmias, and acute cardiac insufficiency arose more often in the patients without preinfarction symptoms and in those with acute preinfarction symptoms than in those with a subacute course. Apparently the absence of precursors of myocardial infarction and an acute course of the preinfarction condition are prognostically unfavorable signs. Reference 1 (Russian).

2/2

USSR/GDR

UDC 619:576.807.7:616.981.42

IVANOV, M. M., and MALAKHOVA, T. I., The All-Union State Scientific Committee for Immunology; BATKE, B., The Jena Scientific Research Institute for Veterinary Science; GRESER, A. M., The Dessau Scientific Research Institute For Inoculation Substances; BEL'CHENKO, V. B., The Karaganda Scientific Research Institute for Veterinary Sanitation; and DURANOV, V. S., The Kuybyshev Scientific Research Institute for Veterinary Sanitation

TESTING THE ROSE-BENGAL ANTIGEN IN DIAGNOSING BRUCELLOSIS IN ANIMALS

Moscow VETERINARIYA in Russian No 9, Sep 76 pp 87-89

[Abstract] The test results relate to the Rose-Bengal antigen prepared by the All-Union State Scientific Committee for Immunology and the Dessau [East Germany] institute, an 8% suspension in a buffer solution with pH=3.65 and dead cells of the strain Br. abortus 19. It was compared in effects with serums from the blood of healthy cattle, sheep and swine; with cattle infected with tuberculosis, paratuberculosis, leucosis and leptospirosis; with small horned stock infected with vibriosis, tularemia, and infectious epididymitis; and with swine infected with leptospirosis and paratyphoid. The results

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USSR

IVANOV, M. M., MALAKHOVA, T. I., BATKE, B., GRESER, A. M., BEL'CHENKO, V. B., and DURANOV, V. S., VETERINARIYA No 9, Sep 76 pp 87-89

indicated that a photographic plate reaction with the Rose-Bengal antigen is highly specific: 330 tests of blood serum gave negative results. Animals whose serum gave positive results were killed and it was determined from bacteriological investigations that positive Rose-Bengal reactions did in fact indicate a diagnosis of brucellosis with high sensitivity. Thus the simple and quick method is to be recommended for serological diagnosis of the disease. Tables 2.

2/2

USSR

UDC 619:616.074:615.9:639

KORZHEVENKO, G. N., LESHCHEV, V. V., METELEV, V. V., and BRICHKO, V. F.,  
The All-Union Scientific Research Institute for Veterinary Sanitation

A QUICK METHOD FOR DIAGNOSING POISONING OF FISHES BY ORGANOPHOSPHORUS  
PESTICIDES

Moscow VETERINARIYA in Russian No 9, Sep 76 pp 90-92

[Abstract] The method presented is intended for ichthyopathologists and toxicologists; it is both simple and highly sensitive. It is based on the principle of extraction from water using chloroform and from fishes using acetone. The extract is then purified and thionic phosphates activated in hydrogen peroxide vapor. The presence of organophosphorus compounds is determined with test paper. Minimal measured amounts of specific compounds range from 0.02 mg/kg, to 0.1 mg/kg. The method can be applied to chlorophosphate, benzophosphate, methyl-nitrophosphates such as sumithion and metathion, trichlorometaphosphate-3, metaphosphates, carbophosphates, phthalophosphates, and Baytex, to show probable effects and acceptable concentrations in water. The method may also be used for quick diagnosis of poisoning by organophosphorus compounds that appear in waters, fish and fish products.

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USSR

UDC 061.62

BOGDANOV, G. A., corresponding member, VASKhNIL

TOWARD NEW FRONTIERS IN ZOOTECHNOLOGY

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 8, Aug 76 pp 15-16

[Abstract] The Ukrainian Institute for Animal Husbandry of the Forest Steppes and Forest Regions has prepared directional and principal plans for improving intercollective cooperation and production concentration in the Five-Year-Plan period 1976-1980. New technological advances are anticipated in utilization of equipment for producing milk, beef and pork, thereby achieving labor savings. Synthetic nitrogen and other chemical substances are to be used in greater quantities. Specific norms for increasing production in all areas are presented, all intended to fulfill the directives of the Five-Year-Plan presented at the 25th Party Congress. The specific efforts of other scientific institutions in the Ukraine are also outlined, with the aims of better utilization of technology, expansion of the feed base for intensified animal husbandry. Quality, storage and use of feed are to be placed on a scientifically-sound basis for maximum results. The production of the experimental farms of the Institute offers guidelines and examples for the general agricultural sector.

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USSR

UDC 619.616.092:636.2

MOVSESYAN, T. B. and KAZARYAN, S. O., Yerevan Veterinary Institute

PATHOLOGICAL MORPHOLOGY OF THE CENTRAL NERVOUS SYSTEM IN FOOT AND MOUTH DISEASE OF CATTLE

Yerevan BIOLOGICHESKIY ZHURNAL ARMENII in Russian No 7, 1976 signed to press 3 Jul 75 pp 94-95

[Abstract] Gross examination of specimens from the cortex, subcortex, and other parts of the brain of animals that died of foot and mouth disease revealed signs of hemodynamic disturbances manifested by engorgement of meningeal blood vessels, especially those of the dura mater, and increased fluid. The microscopic picture was characterized by dilatation of the blood vessels, swollen, vacuolated or compressed, sclerotic neurons. The changes occurred in a definite sequence: acute swelling of the cells, dissolving of Nissl bodies, homogenization of the cytoplasm, appearance of vacuoles and then karyolysis. These changes are regarded as complex hydroponic dystrophy of cortical cells.

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USSR

UDC 619:615.777/.779

LESHCHEV, V. V., and TALANOV, G. A., The All-Union Scientific Research Institute for Veterinary Sanitation

DETERMINING ORGANIC PHOSPHORUS COMPOUNDS IN FEEDS AND PRODUCTS

Moscow VETERINARIYA in Russian No 9, Sep 76 pp 82-83

[Abstract] Soviet methods for determining phosphorus compounds have been either insufficiently precise or too time-consuming, so the present study sought a method for measuring organophosphorus insecticide residues in animal feeds and products using test paper. The method was based on extracting the compounds with acetone, purifying them and activating thionic phosphates in hydrogen peroxide vapor. Depending on the specific phosphorus compound, the minimum quantity that could be measured ranged from 0.01 to 0.05 mg/kg. The analysis, which is semiquantitative, requires 4 hours. The necessary solutions and reactants, equipment, and preparation, as well as the course of the analytic process, are described.

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USSR

UDC 619:616.988.43-084.47

BELOKON', I. K., MIKHAYLYUK, A. P., SOBKO, A. I., NERSENYAN, S. YE., BARSEGYAN, B. S., and VOSKANYAN, G. YE., All-Union Scientific Research Institute for Controlling Hoof-and-Mouth Disease; and SHMAVONYAN, P. M., The State Directorate for Virology of the Ministry of Agriculture, Armenian SSR

SPECIFIC PROTECTIVE MEASURES AGAINST HOOF-AND-MOUTH DISEASE FOR OPEN PASTURE STOCK

Moscow VETERINARIYA in Russian No 9, Sep 76 pp 37-38

[Abstract] The present study covers 3 years of analysis of data concerning hoof-and-mouth disease immunization in Armenia, where previously, although about 90% of livestock had been vaccinated in one form or another, no consistent program had been carried out prior to the beginning of open pasturing. Vaccines had been received in small shipments and preservation and inoculation techniques had been uneven. In the test study large and small horned stock was inoculated one month prior to open pasturing, with calves receiving one vaccination at 4 months and a booster 3 months later. Observations indicated that single inoculation of adult stock did not prevent the

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USSR

BELOKON', I. K., et al, VETERINARIYA No 9, Sep 76 pp 37-38

occurrence of hoof-and-mouth disease. An initial vaccination prior to summer pasturing, and revaccination upon return from the open pasture, was tried in a third year of testing. Results then were successful, and indicated that protection against hoof-and-mouth disease involved not only proper procedures in vaccinating, but correct timing of the vaccinations for animals which are exposed to infection.

2/2



USSR

UDC 619:616.9-097:616.981.51

KOLESOV, S. G., RUDENKO, L. P., ROMANOV, G. I., and SOLOMATIN, V. I., The All-Union State Scientific Committee for Immunology; KRETININ, V. K., BONDARENKO, N. A., POLYAKOV, V. A., and TIMOSHENKO, The Orel Biological Plant, and YASTREBOV, V. A., The Central Veterinary Laboratory

A STUDY OF THE DURATION OF IMMUNITY IN SHEEP VACCINATED WITH ANTHRAX VACCINE

Moscow VETERINARIYA in Russian No 9, Sep 76 pp 33-34

[Abstract] The method of infecting with a virulent culture was used to determine the immunity of vaccinated sheep 12, 19 and 24 months after initial prophylaxis. Immunity could be determined by comparing the incidence of anthrax in the tested animals with that in control animals that died of the disease. Results of recent investigations have contained questionable results that can be resolved by this objective method. The immunogenic properties of dry anthrax vaccines were tested on previously untreated sheep of 1.5-3 years of age, with average weights of 32 kg, by subcutaneous injection of 0.3 ml of the vaccine. After 12, 19 and 24 months the test animals were infected with 1000 spores of virulent anthrax initially, then with 20,000

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USSR

KOLESOV, S. G., RUDENKO, L. P., et al, VETERINARIYA No 9, Sep 76 pp 33-34

at 12 months, 25,000 at 19 months and 15,000 at 24 months. Results indicated that vaccination provides immunity lasting effectively not less than two years. No significant difference was recorded that could be attributed to varying dosages. One table.

2/2

USSR

UDC 619.576.809.72576:858.4

SALAZHOV, YE. L., AVILOV, V. S., and REVENKOV, A. G., The All-Union Research Institute of Experimental Veterinary Science

THE ROLE OF ANTIBODIES IN ANTIGEN VARIATIONS OF THE FOOT-AND-MOUTH DISEASE VIRUS

Moscow VETERINARIYA in Russian No 8, Sep 76 pp 31-32

[Abstract] The investigation sought to determine the effects of specific antibodies on changes in the antigen properties of hoof-and-mouth disease viruses in cell cultures and the organisms of immunized guinea pigs and white mice. Virus A<sub>22</sub> strain 550 was used as the infectant, while the immune serum came from guinea pigs and cattle that had been hyperimmunized and had recovered from infection by virus A<sub>22</sub> and O. Specimens taken from the test animals showed significant changes in the virus which was derived from pig embryos in the presence of immune serum A<sub>22</sub>, but no such change was established in the serum obtained from calf kidney cultures. Comparative analysis of the strains tested indicate clear changes in the antigen properties of the viruses. Specific antibodies are not apparently the primary reason or the

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USSR

SALAZHOV, YE. L., AVILOV, V. S., and REVENKOV, A. G., VETERINARIYA No 8, Sep 76 pp 31-32

direct cause of changes in antigen properties in the hoof-and-mouth disease virus, but are only a selective factor facilitating the determination of mutant strains that emerge because of causes that are as yet unknown. Tables 2.

2/2

USSR

UDC 619.614.95636.085/.086:636.088

BURDELEV, T. YE., ZHIL'TSOV, V. G., STEPANOVA, L. V., KOKORINA, YE. K.,  
and PAVLENKO, V. I., The Timiryazev Agricultural Academy

#### UNIFIED RATIONS AND ANIMAL PRODUCTIVITY

Moscow VETERINARIYA in Russian No 9, Sep 76 pp 23-25

[Abstract] The investigation studied 18 cows and 20 healthy calves of the black-spotted breed, the latter 6-7 months old. It divided them into control and experimental groups and fed them rations according to the standards of the All-Union Institute for Animal Husbandry, consisting of grass and legume hay, wheat straw, potatoes or beets, corn silage, sunflower groats and pre-mixed supplements. The control group received these rations in a natural form, while the test animals were given pulverized and moistened feed. The feed was prepared mechanically and given 3 times daily, and observations were recorded of environmental and physiological parameters. Clinical records indicated no adverse effects from the test feed in any physiological measurement. The animals consumed the moistened feed more rapidly, but there

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USSR

BURDELEV, T. YE., ZHIL'TSOV, V. G., STEPANOVA, L. V., KOKORINA, YE. K.,  
and PAVLENKO, V. I., VETERINARIYA No 9, Sep 76 pp 23-25

was no difference in the digestive processes of the two groups. It proved possible to economize on feeds using the pulverized and moistened mixture and adding straw in amounts of up to 5 kg, while achieving normal weight gains.

2/2

USSR

MAKSIMOV, A. A.

LANDSCAPE TYPIZATION OF NATURAL FOCAL DISEASES OF DOMESTIC AND FARM ANIMALS

VOPR. PRIPOD. OCHAGOVOSTI BOLEZNEY in Russian No. 8 Alma-Ata, 1976 pp 42-49

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No. 8, 1976 Abstract No. 8.36.58 from the resume]

[Text] The author discusses the theory of landscape typization as applicable to natural focal diseases of domestic and farm animals, since the latter are permanent components in the biocenoses of natural focal infections, frequently representing necessary links in the chains of circulation of pathogens (water rat, muskrat, rabbit, etc.). 14 references.

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USSR

DZHUPINA, S. I.

STUDY OF THE PECULIARITIES OF THE EPIZOOTIC PROCESS IN THE LIGHT OF THE STUDY OF NATURAL DISEASE FOCI

VOPR. PRIPOD. OCHAGOVOSTI BOLEZNEY in Russian No. 8, Alma-Ata 1976 pp 18-26

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No. 8, 1976 Abstract No. 8.36.59 from the resume]

[Text] General biological prerequisites are presented for the regularities of the epizootic process, which are illustrated on the examples of rabies, rodent distemper, listeriosis and other infectious diseases. The epizootic process develops when there is a source, mechanism of transmission of the infectious pathogen and animals to receive it: the relationship of infectious pathogen to receptive animals is characterized as the relationship of parasite to host. The source of the pathogen is a diseased organism which may be an obligatory, potential or facultative host. 13 references.

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USSR

ADAMOVICH, V. L.

THE EPIZOOTIC PROCESS, EPIZOOTIES AND THE NUMBER OF ANIMALS

VOPR. PRIROD. OCHAGOVOSTI BOLEZNEY in Russian No. 8 Alma-Ata 1976, pp 27-41

[From REFERATIVNYY ZHURNAL, MEDITSINSKAYA GEOGRAFIYA No. 8, 1976 Abstract No. 8.36.81 from the resume]

[Text] On the example of tularemia, the essence of the epizootic process is revealed, consisting in fluctuation of infections in elementary foci, which have no direct relationship to the population of water rats or common vole. A formula is produced for determination of the epizootic characteristics of a terrain. In composing epizootic prognoses and organizing preventive measures, one should consider not only the number of animals and the nature of the epizooties, but also their biocenotic relationships and placement of populations in the landscape. A map is presented showing natural foci of tularemia in the Polesskaya lowlands. 23 references.

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## Publications

USSR

UDC 576.8.095

KARASEVICH, YU. N.

### EXPERIMENTAL ADAPTATION OF MICROORGANISMS

Moscow EXPERIMENTAL'NAYA ADAPTATSIYA MIKROORGANIZMOV "NAUKA" 1975 179 pp

[Excerpts] Annotation

In this monograph a wide experimental material on the adaptation of microorganisms to various environmental factors has been analyzed and summarized. Special attention was devoted to experimental adaptation of microorganisms to unnatural organic compounds acting as the sole sources of carbon, nitrogen and energy. Possible molecular and genetic adaptation mechanisms have been reviewed as well as the role of the environment in the process of adaptive alteration of these microorganisms.

This work is aimed at scientists-microbiologists, instructors, aspirants, and students at VUZ microbiology departments. Tables 9, 34 pages of references.

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USSR

KARASEVICH, YU. N., EXPERIMENTAL'NAYA ADAPTATSIYA MIKROORGANIZMOV "NAUKA" 1975 179 pp

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USSR

KARASEVICH, YU. N., EXPERIMENTAL'NAYA ADAPTATSIYA MIKROORGANIZMOV "NAUKA"  
1975 179 pp

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KARASEVICH, YU. N., EXPERIMENTAL'NAYA ADAPTATSIYA MIKROORGANIZMOV "NAUKA"  
1975 179 pp

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USSR

SHIGAYEVA, M. KH.

MICROB'AL GENETICS AND MICROBIOLOGICAL INDUSTRY

Alma-Ata GENETIKA MIKROBOV I MIKROBIOLOGICHESKAYA PROMYSHLENNOST' "ZNANIYE"  
1975 36 pp

[Extract] Annotation

Microbial genetics is a young branch of science, nevertheless its progress has played an important role in human activity. It should be sufficient to mention that the microbiological industry is the offspring of microbial genetics. Development of novel genetical methods of selection made it possible to increase, manyfold, the activity of the cultures forming antibiotics, vitamins, enzymes, hormones and other biologically active compounds, which in its turn has made it possible to increase the production of these valuable products on industrial level. Recent achievements of the genetics and selectivity of microbes and their practical importance are related in this brochure.

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USSR

SHIGAYEVA, M. KH., GENETIKA MIKROBOV I MIKROBIOLOGICHESKAYA PROMYSHLENNOST'  
"ZNANIYE" 1975 36 pp

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USSR

YANSON, KH. A.

# BIOMECHANICS OF HUMAN LOWER EXTREMITIES

Riga BIOMEKHANIKA NIZHNEY KONECHNOSTI CHELOVEKA in Russian 1975 324 pp

[Excerpt] Annotation

This book discusses the characteristics of the actions of various elements of human lower extremities considered as biomechanical systems. Basic attention is given to the interaction of joint and bone muscles. The deformation and conditions of loading of the tibia (shin bone) in physiological and pathological conditions are studied. On this basis there is an examination of the mechanisms of bone adaptation to external loads. The description of new methods of studying the biomechanics of human lower extremities occupies a large place in the book. There are suggestions of new methods of treating orthopedic-traumatological patients developed on the basis of biomechanical research. There is also an exposition of the basis of the biomechanics of treating fractures of diaphysial bones. Tables 49; illustrations 195; bibliography 1,018 entries.

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USSR

YANSON, KH. A., BIOMEKHANIKA NIZHNEY KONECHNOSTI CHELOVEKA 1975 324 pp

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YANSON, KH. A., BIOMEKHANIKA NIZHNEY KONECHNOSTI CHELOVEKA 1975 324 pp

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USSR

UDC 619:616.9-036.22:519.2

TARSHIS, M. G., and KONSTANTINOV, B. M.

MATHEMATICAL METHODS IN EPIZOOTOLOGY

Moscow MATEMATICHESKIYE METODY V EPIZOOTOLOGII "KOLOS" 1975 174 pp

[Excerpt] Annotation

The epizootological process (concurrent sickness of a large number of animals due to any disease) is a complex system whose analysis became possible thanks to the development of mathematics and electronic calculating technology. This book is devoted to the description of the original attempts of development of mathematical methods for the solution of epizootological problems: prognostication of infectious diseases of animals, studies of the routes and periods of their dissemination and the relationships between the causes and the extents of epizootics.

This book is designed for veterinary physicians, scientists, teachers and students of advanced courses at veterinary institutes and faculties. Tables 53; figures 26; references 9: all Russian.

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USSR

TARSHIS, M. G., and KONSTANTINOV, B. M., MATEMATICHESKIYE METODY V  
EPIZOOTOLOGII 1975 174 pp

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TARSHIS, M. G., and KONSTANTINOV, B. M., MATEMATICHESKIYE METODY V  
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USSR

LAVNIKOV, A. A.

FOUNDATIONS OF AVIATION AND SPACE MEDICINE

Moscow OSNOVY AVIATSIONNOY I KOSMICHESKOY MEDITSINY in Russian 1975 359 pp

[Excerpt] Annotation

This book examines the influence of various factors of flight on the human body and the physiological-hygienic characteristics of aircraft cabins and oxygen respiratory equipment. A special chapter is devoted to the basic characteristics of space flights. The book also gives information on problems of hygiene in flight support in various climatic conditions and during equipment servicing.

It is intended for students at aviation academies, at military flight schools, and aviation flight personnel in all departments, and everyone interested in problems of aviation and space medicine.

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USSR

LAVNIKOV, A. A., OSNOVY AVIATSIONNOY I KOSMICHESKOY MEDITSINY 1975 359 pp

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USSR

POPOVSKIY, V. G., BANTYSH, L. A., IVASYUK, N. T., GRINBERG, N. Kh., and GORSHUNOVA, G. B.

# FREEZE DRYING OF FOOD PRODUCTS OF VEGETABLE ORIGIN

Moscow SUBLIMATSIONNAYA SUSHKA PISHCHEVYKH PRODUKTOV RASTITEL'NOGO PROISKHOZHDENIYA in Russian 1975 335 pp

## [Excerpt] Annotation

This book summarizes the study of the technological processing of vegetable raw materials by freeze drying carried out at the Moldavian Scientific Research Institute of the Food Industry. It examines results of experimental research on the intensification of processes of freezing and freeze drying of fruit and berry puree with the use of magnetic and electrical fields, and, also, the results of physical-chemical and biochemical and microbiological study of fruits, berries and their products after freeze drying and prolonged storage (4-5 years). It shows the possibility of the mathematical modeling of the quality of freeze dried products and of forecasting the periods of storage of such products.

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USSR

POPOVSKIY, V. G., et al, SUBLIMATSIONNAYA SUSHKA PISHCHEVYKH PRODUKTOV RASTITEL'NOGO PROISKHOZHDENIYA 1975 335 pp

The research results indicate the potential of organizing the industrial production of freeze dried food products. The principles of industrial freeze drying and problems of economic efficiency are illuminated. Tables 60; illustrations 97; bibliography 239 entries.

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USSR

POPOVSKIY, V. G., et al, SUBLIMATSIONNAYA SUSHKA PISHCHEVYKH PRODUKTOV  
RASTITEL'NOGO PROISKHOZHDENIYA 1975 335 pp

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POPOVSKIY, V. G., et al, SUBLIMATSIONNAYA SUSHKA PISHCHEVYKH PRODUKTOV  
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USSR

UDC 581.1:581.143.581.132581.14

Academy of Sciences, Kazakh SSR, Institute of Botany

PHYSIOLOGY OF WINTER WHEAT IN SOUTHEASTERN KAZAKHSTAN

Alma-Ata FIZIOLOGIYA OZIMOY PSHENITSY NA YUGO-VOSTOKE KAZAKHSTANA in Russian  
"Nauka" 1974 188 pp

[Excerpt] Annotation

The book generalizes results of a study of physiological essentials of the resistance and the influence of growth stimulants and photosynthetic activity of winter wheat in the irrigated zone of the southeastern Kazakhstan. It contains experimental data on the resistance of various strains of the winter wheat to the conditions of hibernation, high summer temperatures and lodging. The ways are indicated for increase of the resistance of winter wheat to unfavorable environmental factors, and methods are suggested for the development of new high-productive forms of plants.

The book deals with questions of the photosynthetic activity and the crop formation of winter wheat. Study is made of the structural and functional

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USSR

FIZIOLOGIYA OZIMOY PSYEHNITSY NA YUGO-VOSTOKE KAZAKHSTANA 1974 188 pp

peculiarities of the foliage of plants in connection with varietal characteristics and agricultural practices. Diagnostic signs which determine a high resistance and productivity of winter wheat are pointed out.

The book is intended for a broad range of readers: phytophysiologists, plant breeders, agronomists, as well as for teachers and students of biological and agricultural departments of vuzes. Tables 83; references 235; illustrations 53.

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USSR

FIZIOLOGIYA OZIMOY PSHENITSY NA YUGO-VOSTOKE KAZAKHSTANA 1974 188 pp

L. I. Kiseleva, G. P. Yesaulenko, Z. S. Ospanova). Influence of "UR" Preparation (chlorocholinechloride) upon Vital Activity and Resistance of Winter Wheat to Lodging (F. A. Polimbetova, O. M. Gladysheva, A. S. Kudaybergenova, L. I. Kiseleva, Ye. L. Lukicheva, Z. S. Ospanova, G. P. Yesaulenko)	48
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FIZIOLOGIYA OZIMOY PSHENITSY NA YUGO-VOSTOKE KAZAKHSTANA 1974 188 pp

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FIZIOLOGIYA OZIMOY PSHENITSY NA YUGO-VOSTOKE KAZAKHSTANA 1974 188 pp

Effect of the Structure of Sowings and Strain Peculiarities of Plants Upon Photosynthetic Activity of Plants (V. P. Bedenko, K. K. Voynovskaya, Z. S. Parshina, B. B. Intykbayeva, A. A. Fedyushin, G. P. Usharova, G. T. Darkanbayeva, K. Sh. Koshanova)	130
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\*[i.e., incident solar radiation in the wavelength range of 0.380-0.710  $\mu$ --Translator's note]

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USSR

UDC 633.1:581.192

NECHAYEV, Aleksey Petrovich, and SANDLER, Zhanna Yakovlevna

THE LIPIDS OF GRAIN

Moscow LIPIDY ZERNA in Russian "Kolos" 1975 159 pp

[Excerpt] Annotation

The book presents a classification of lipids and the modern concept on their composition and structure. Characteristics are given of the lipid complex of grain, the content and composition of the lipids of flour and groats, changes in lipids upon the ripening of grain and basic technological processes of its processing (drying, hydrothermal treatment). A special section of the book is devoted to the changes of lipids and biologically active substances of lipidic nature upon storage of grain products.

The book is intended for scientific workers dealing with chemistry and technology of the storage and processing of grain, and may be also used by plant breeders and agronomists. Tables 110; illustrations 10; and a bibliography.

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USSR

NECHAYEV, A. P., and SANDLER, Z. Y., LIPIDY ZERNA 1975 159 pp

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NECHAYEV, A. P., and SANDLER, Z. Y., LIPIDY ZERNA 1975 159 pp

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USSR

UDC 632.9;595.763.79

SAVOYSKAYA, Galina Ivanovna, candidate of biological sciences

INSECTS, THE PROTECTORS OF CROPS

Alma-Ata NASEKOMYYE-ZASHCHITNIKI UROZHAYA in Russian "Kaynar" 1974 127 pp

[Excerpt] Annotation

The book tells about the use of beneficial insects, coccinellids, or, as they are popularly called, "ladybugs," for the control of injurious insects in agriculture, such as aphids, coccids, scales, spider mites, and others. Some of these lady beetles are distributed over the whole world and are being successfully used as a biological method of pest control.

The author describes to the readers the biology and morphology of coccinellids, evaluates their useful activity, and advises how to breed, preserve and use them for the control of pests in gardens and fields.

The book is intended for agronomists engaged in the protection of plants, scientific workers, and for students of agricultural vuzes and technical schools.

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USSR

SAVOYSKAYA, G. I., NASEKOMYYE-ZASHCHITNIK UROZHAYA 1974 127 pp

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USSR

Academy of Sciences Latvian SSR, Institute of Microbiology imeni Avgust  
Kirkhenshteyn

BIOSYNTHETIC AND PHYSIOLOGICAL PROPERTIES OF MICROORGANISMS

Riga BIOSINTETICHESKIYE I FIZIOLOGICHESKIYE SVOYSTVA MIKROORGANIZMOV in  
Russian "Zinatne" 1975 166 pp

[Excerpt]

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BIOSINTETICHESKIYE I FIZIOLOGICHESKIYE SVOYSTVA MIKROORGANIZMOV 1975 166 pp

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BIOSINTETICHESKIYE I FIZIOLOGICHESKIYE SVOYSTVA MIKROORGANIZMOV 1975 166 pp

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USSR

ALIYEVA, R. M., FROLOVA, L. F., SHIGAYEVA, M. KH., and AKHMATULLINA, N. B.--  
Editorial Board

#### PRODUCTION OF USEFUL MICROORGANISMS

Alma-Ata, "Nauka" Kaz SSR, 1974

[Translation] Annotation

This book is devoted to an important problem, namely, the production of useful microorganisms.

In this collection materials are reported on the elucidation of active forms of actinomycetes, which produce antibiotic and vitamin B<sub>12</sub>, used in medicine and animal breeding. A series of papers is devoted to selection of bacteria which produce organic acids. Light is shed on problems in production of valuable yeasts cultures, which are used in the bread baking industry, and new fungi strains for stimulation of plant growth.

The utilization of selective methods in virological studies are discussed.

This book is designed for microbiologists, virologists, geneticists, selectionists and workers in agricultural production.

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ALIYEVA, R. M., FROLOVA, L. F., SHIGAYEVA, M. KH., and AKHMATULLINA, N. B.,  
"Nauka" 1974

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Mutability and Selection of Bacteria

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USSR

TLEULIN, S. ZH., ISABEKOVA, S. B., and KLEYNBOK, I. YA., Editorial Board

SPINAL MECHANISMS OF THERMOREGULATION

Alma-Ata, "Nauka" KazSSR, 1976 pp 112

[Translation] Annotation

In this book the regulations of temperature information processing on the level of spinal cord are discussed. Results of electrophysiological studies of spinal neurons are reported and, also, of pre- and postganglion fibers, vascular reactions of various regions, reflex reactions (H-reflex in humans) in response to the temperature stimulation of the skin, and methodological guidelines on automation of the data obtained.

Studies in this area are just now being carried out for the first time in our country and abroad. They are very important in clarification of the processing of information, on skin perception, at the level of the spinal cord, and have practical value for therapeutic and prophylactic medicine.

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USSR

TLEULIN, S. ZH., ISABEKOVA, S. B., and KLEYNBOK, I. YA., "Nauka" 1976 pp 112

This book is designed for physiologists, neuropathologists, physiotherapists, biologists working in physiological experiments, and for engineers working in the area of medical electronics.

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II. BEHAVIORAL SCIENCES  
Engineering Psychology

USSR

UDC 613.65:621.791-181.48:007.51

ACHAPOVSKAYA, A. M., Byelorussian Branch of the All-Union Scientific Research Institute of Technical Esthetics, Minsk

WORKING POSTURE OF WELDING INSTALLATION OPERATORS

Moscow GIGIYENA I SANITARIYA (Hygiene and Sanitation) in Russian No 9, Sep 76 signed to press 28 May 74 pp 102-103

[Abstract] Proper organization of the working area is very important for workers exposed to increased requirements of their psychophysiological functions. Among such groups are the welders of microintegral systems, working on the border of the invisibility with naked eye. A study was carried out concerning the heights of desks and chairs, which would assure maximum comfort and highest productivity. Optimal heights of these items were determined for short, medium and tall women. No figures, tables or references.

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USSR

UDC 613.6-053.9

IGNATENKO, I. K., candidate of medical sciences, and DOROSHENKO, K. V., Ukrainian Branch of the Scientific Research Institute of Labor, Voroshilovgrad

LABOR CONDITIONS OF WORKING RETIREES

Moscow GIGIYENA I SANITARIYA (Hygiene and Sanitation) in Russian No 9, Sep 76 signed to press 18 Nov 75 pp 108-109

[Abstract] Working conditions of 202 retired workers who became reemployed have been analyzed. Most of them preferred to work at their original employment site; all have been working a full 8 hr shift, in the second and third category of difficulty. On the basis of this study conclusions have been reached that retirees should be employed only at the first and second category of difficulty, preferably for less than the full time 8 hr shifts, and if possible at their own homes where they could determine their own pace and time. Table 1; no figures or references.

USSR

UDC 575.111/112+591.35

TRUT, L. N., and BORODIN, P. M., Institute of Cytology and Genetics, Siberian Division of the Academy of Sciences USSR

EFFECT OF ENVIRONMENTAL FACTORS ON EARLY BEHAVIORAL DEVELOPMENT OF SOME LABORATORY RODENTS

Moscow USPEKHI SOVREMENNOY BIOLOGII in Russian No 1(4), 1976 pp 143-155

[Abstract] Review of the Soviet and western literatures on behavioral modification of rats and mice indicates that various prenatal and early postnatal actions (handling, administration of hormones, electroshock and other stresses) give rise to significant and stable changes in adult behavioral and other physiological characteristics and, in some cases, characteristics of the following generations. The force, direction of the changes, and the characteristics affected vary both with the intensity, duration, and type of action, period of ontogeny in which stimulation takes place, and with the genotypes of the mother and fetus. All the factors interact if they are continued for some length of time. Regarding the possible mechanism of

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TRUT, L. N., and BORODIN, P. M., USPEKHI SOVREMENNOY BIOLOGII No 1(4), 1976 pp 143-155

realization of the behavioral effects of early postnatal stimulation, it is suggested that certain hormones are essential for development of the nervous system at critical stages of ontogeny. The hormonal correlations modified by environmental influences at these times may shape the development of various functional systems and behavioral reactions in different ways. References 83: 6 Russian, 77 Western.

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CSO: 1840

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